NATIONAL CAR BUILDER

VOLUME XVI.
NUMBER 6

DEVOTED TO THE INTERESTS OF RAILWAY ROLLING STOCK.

$1.00 PER ANNUM
SINGLE NUMBERS TEN CENTS.

NEW YORK:
Morse Building, 140 Nassau St.

JUNE, 1885.

Entered at the Post Office at New York N. Y., as Mail Matter of the Second Class.

CHICAGO:
144 N. Clark Street.

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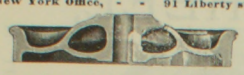

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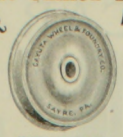

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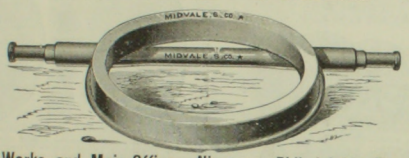

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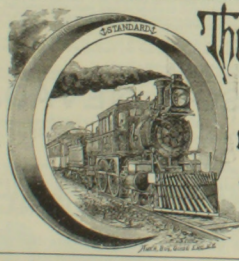

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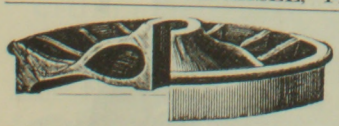

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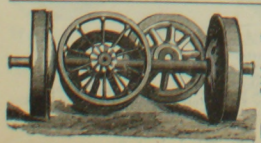

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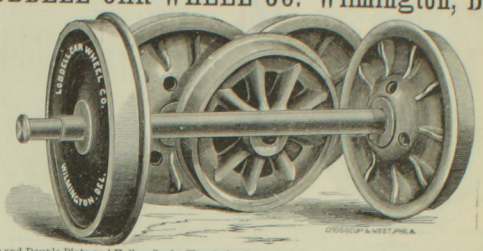

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STEEL CASTINGS
FROM 1-4 TO 15,000 lbs. WEIGHT.
True to pattern, sound and solid, of unequaled strength, toughness and durability. An invaluable substitute for forgings or cast-iron requiring three-fold strength. Gearing of all kinds, Shoes, Dies, Hammer-Heads, Cross-Heads for locomotives, etc. 40,000 Crank Shafts and 30,000 Gear Wheels of this steel now running prove its superiority over other steel castings. CRANK SHAFTS, CROSS-HEADS and GEARING specialties. Circulars and Price Lists free.
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THE STANDARD COOLER.

This compound as a cooler and lubricator for **Hot Journals** is unsurpassed.
Is best applied as a dope by mixing well with waste saturated with oil, and packing close to the journal.

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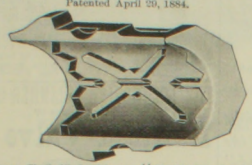

This Bronze Shell, filled with our **"NICKEL ANTI-FRICTION,"** is producing immense mileage on all railroads now using, among them the **Chicago, Milwaukee & St. Paul Railway,** who have adopted over all others, and to whom we are pleased to refer by permission.

Our "Anti-Friction" Metal is **UNSURPASSED** as a lubricator, under any pressure, slow or greatest speed.

OUR "SUPERIOR BRONZE" we warrant unsurpassed by that of any other so-called Bronze or composition Metal for bearings and miscellaneous purposes. We will furnish this metal in Castings or Ingot, as may be desired, and respectfully solicit your correspondence. We have as large a Smelting Capacity as any Foundry in Brass and Bronze in the country, and are able to **FILL ALL ORDERS PROMPTLY.**

Please request our prices (f. o. b. anywhere in United States) on Bearings, Brass and Bronze Work, Anti-Friction Metal in Pigs, etc., etc.

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WE REFER TO WESTERN RAILROAD ASSOCIATION AS TO VALIDITY OF PATENTS.

Car-Builders will find it Advantageous to Communicate with Us.

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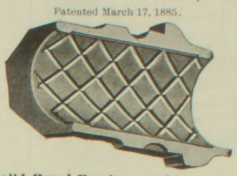
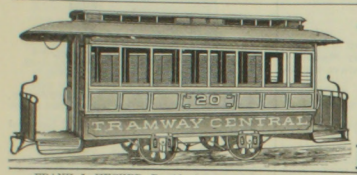


This is a **Solid Bored Bearing,** containing grooves one-eighth inch deep for free distribution of oil in starting, thereby prevening many hot journals.

The above, when made from our "Superior" Bronze, and lined with our "Nickel Anti-Friction," produces a bearing which recent severe tests have convinced our customers to be the best yet, as a prominent Railroad Manager says, "The 'gilt edged' Bearing of America, yielding in its nature and **not wearing the journal, yet resisting self-wear** better than any other Bearing I ever saw."



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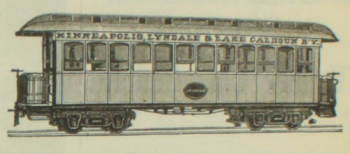
BUILDERS OF

RAILWAY AND TRAMWAY CARS.



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And is Prepared to Build for LEASE and on Contract for CASH, or under the CAR-TRUST SYSTEM, such ROLLING STOCK as may be Required.

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Evening trains leave CLEVELAND daily with Rotunda Sleeping Cars for COLUMBUS, CINCINNATI, INDIANAPOLIS, LOUISVILLE, TERRE HAUTE, EVANSVILLE, ST. LOUIS and all points West and South. Morning trains leave Daily, except Sunday, with Through Palace Coaches, for COLUMBUS, CINCINNATI, INDIANAPOLIS, LOUISVILLE, and ST. LOUIS without change. This is the only line making direct communication with all the Principal Trunk Lines of the East for NASHVILLE, MEMPHIS, NEW ORLEANS and all points in Texas, either by way of LOUISVILLE or ST. LOUIS. Direct connection as ST. LOUIS for all Railway Towns in Kansas, Nebraska and Colorado.

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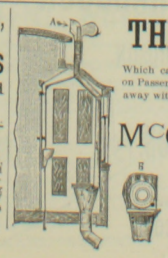
THE BEST ROAD-BED AND SAFEST ROAD IN THE WEST.

E. B. THOMAS, General Manager. A. J. SMITH, General Ticket Agent.



THE DETROIT VENTILATOR,

Which carries a powerful Current of Air directly through the Urinal and Hopper on Passenger Cars and Steamboat Closets while in motion or standing, hence doing away with all mephitic odors, to the health and comfort of their patrons.

McGOVERN & WILLSON,

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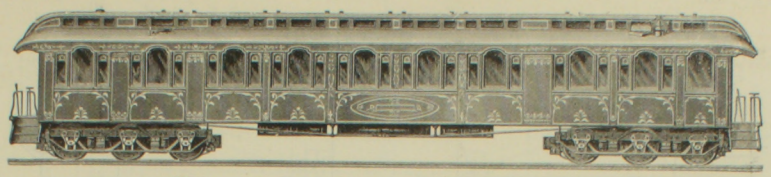
Index to Advertisements in the National Car-Builder.

THE NATIONAL CAR-BUILDER.



DEVOTED TO THE INTERESTS OF RAILWAY ROLLING STOCK.

VOLUME XVI. NUMBER 6. | JUNE, 1885. | SINGLE NUMBERS, TEN CENTS. $1.00 PER ANNUM.

Miscellaneous Items.

THE Fitchburg Railroad have put on a new fast express train between Boston and Saratoga. A new equipment of elegant Pullman palace and buffet drawing-room cars compose the train.

STEAM motors, each weighing 3,500 pounds have been adopted by the Horse Railroad Company of Concord, N. H. Each motor is calculated to pull one car and make a speed of fifteen miles an hour where permissible.

MR. GEORGE HACKNEY, superintendent of motive power of the Atchison, Topeka & Santa Fé Railroad, has just got convalescent after a severe attack of rheumatic fever. He left New York on May 23 by the steamer Gallia for an extended visit to Europe.

A CORRESPONDENT of the Boston *Globe* urges the building of iron or steel railroad cars. Because steel ships have been a decided success, he infers that steel cars would be the same, and claims that they would be more secure against fire and telescoping than wooden cars.

FOR the purpose of saving loss of time with express trains, the New York & New England Railway put in a scoop trough last year, so that the engines could take water while running. The arrangement worked so satisfactorily that they are now putting in another of these troughs.

THE fastest mail train is now found too slow for the transmission of important postal matter. The scheme for sending letters from New York to Chicago by a pneumatic tube in a few minutes is hanging fire, but enterprises of a similar nature are being pushed vigorously in several European cities.

IN the office of Col. Hain, General Manager of the New York Elevated Railroads, are to be seen some extraordinary specimens of cold bent steel. An angle iron is folded close back without showing any traces of fracture. The steel is Bessemer, made at the Edgar Thomson Works, Pittsburgh. Col Hain is in favor of making locomotives entirely of steel.

AN express train on the Vandalia line recently made the run of 240 miles from Indianapolis to St. Louis in 5 hours and 14 minutes. During this run twenty stops were made for stations and crossings, and there was six minutes' delay at meeting point. Over one hour was reckoned to have been lost by stoppages, so that only about 250 minutes were left for running the 240 miles.

THE Boston & Maine road has a new parlor car called the "Magnolia." It is 60 feet long, and is finished inside with mahogany. There are 17 windows on a side. The seating consists of 40 luxurious chairs upholstered in leather, each of which is numbered. It is proposed to sell them to the patrons of the road at $30 per chair for the season of four months, an arrangement that proved very popular last year.

AT the machine shops of the Old Colony Railroad, at South Boston, Mr. Lauder is getting out the boilers for three new locomotives that he intends shall carry steam of 175 pounds pressure. The boilers are of Otis steel throughout, with welt seams. The fire box has crown bars with sling stays. A single sheet is used for the outside shell of the fire-box; a double row of rivets holds the mud, ring which is four inches deep.

CAPT. LUCAS, the superintendent of the Anniston (Ala.) Car Works, has recently built an express fruit car of which he is the designer and patentee. It was used for the first time in carrying a load of bananas from Charleston to Knoxville, and is pronounced a complete success by the traffic managers of the roads over which it passed. No details are given in regard to its construction, except that its top is similar to that of a passenger coach, and that the ventilating arrangements are perfect.

THERE is a simple form of flue cleaner in use at the Boston & Albany shops, Springfield, Mass., which does its work efficiently without making any of the unearthly clatter made by the rattlers general'y used for this purpose. The machine consists of two longated cylindrical rollers, with tooth projections all over their peripheries. The rollers turn towards each other, and mechanism is provided for moving the flue through between them and making it revolve as it goes along. The machine is very simple and could be duplicated at small cost.

THE Franklin Institute, of Philadelphia, lately received an invitation from the Society for the Encouragement of the Arts, Manufactures and Commerce, of London, to nominate a suitable person to receive the "Albert Medal." This medal was founded in honor of Queen Victoria's husband, and is awarded annually to those who have shown distinguished merit in promoting arts, manufactures or commerce. The Franklin Institute recommended William Sellers as a proper recipient of the honor, on account of his distinguished work in devising the United States system of screw-threads.

THE Delaware and Hudson Canal Company, which operate 634 miles of railroad in New York and Pennsylvania, have decided to test all ther trainmen for color blindness. The tests given are the same as those followed by the Pennsylvania and other railroad companies, and consist in matching a few colors by selecting yarns. There is no complexity whatever about the operation, and no man with ordinary vision fails to pass the test satisfactorily. Colored signals are becoming so universally used now that railroad companies are compelled by the interests of safety to make sure that their trainmen are capable of distinguishing colors.

DURING a recent conversation with Mr. Henney, superintendent motive power of the New York, New Haven & Hartford Railroad, he gave us particulars of an accident that strikingly illustrated the advantage of having locomotive parts made to gauge and interchangeable. An engine came in on a fast passenger train with a broken main rod strap, that had led to the front cylinder head being knocked out. There were several engines of the same class in the shop, but none of them ready to take the train. They took a cylinder head, piston and main rod off one of these engines and put them on to the disabled locomotive and sent her along with the train after a few minutes' delay. Every part fitted to perfection, even the piston-rod going into the cross-head as if it were fitted specially for the place.

THE Boston & Albany Railroad Company have got several cars and tenders running with the Bemis axle box, which in every instance has given extraordinary mileage for the amount of oil used. The purpose sought in designing this box has been to exclude all dirt and to keep the oil from working out of the box. Ingenious means are provided for keeping the oil-saturated packing up to the journal, which practically revolves in a bath of oil. Boxes under one tender have been running two hundred miles a day for ten months without being oiled or receiving any attention whatever. Mr. Underhill is so well pleased with the saving of oil and trouble resulting from the use of the box, that he intends applying it to more of his tenders. Mr. Adams is equally well pleased with its performance under his passenger cars, and is extending its use.

THE Old Colony Railroad Company have decided to apply the Westinghouse automatic air brake to twenty-five new cars they have recently built at their shops in Boston. This train will be used for running fast freight between Boston and the New York connection. By this move the Old Colony becomes the first railroad company in New England to adopt a continuous brake on freight car equipment. Mr. Westinghouse designed the method of applying the brake to these cars. The brake rigging will be carried by the truck transom, so the shoes will be applied between the wheels. The shoes are fastened to a trussed iron beam. If the brake works satisfactorily in the severe service of fast freight trains, it is expected the Old Colony will soon have many trains equipped in the same way.

RAILROAD trains were used for rather unusual service during the recent troubles on the Isthmus of Panama. Trains were run under the protection of the United States marines sent there to protect American interests. There was an armored car containing a Gatling gun and a couple of howitzers, and a detachment of blue jackets on every train, and in addition a guard of marines and an officer in the passenger cars. When any insurgents boarded a train, with the intention of making trouble, which was frequently the case, they were promptly fired off without delay or ceremony. The marines displayed great dexterity in using the usual conductor's weapon, and none of the rebels had reason to think the boots supplied to the blue jackets were too light. Several of the leading insurgents were hanged, and in each case a flat car was used as a drop. It was simply pushed from under. On the whole, the Colombian revolutionists have reason to dread the railroad and its equipment.

THE Boston & Providence Railroad repair shops at Boston are among the best arranged shops in New England. A fire that happened a year or two ago cleared out the old shops, and they were replaced by buildings and tools adapted for modern methods of doing work. During the absence of Master Mechanic Richards in Europe, where he has gone for a pleasure and business tour, there is nothing but current repair work going on in the shops. Several engines are undergoing repairs, and two passenger cars are being rebuilt. We were impressed with the efficient and convenient means used of heating the car shops. Hot water is used, which circulates through pipes and maintains a very even temperature in the severest weather. The boiler that heats the water is placed under the floor, and is entirely out of the way. Mr. Thayer, the chief clerk, who is in charge during Mr. Richards' absence, assured us that the system is the most satisfactory he has ever seen working, and he had many years' experience putting in heating apparatus.

CHRISTOPHER WILLIAMS, of Adrian, Mich., has directed our attention to what is described as "certain new and valuable improvements in steam boilers," which have received the protecting seal of the United States Patent Office. The invention consists simply of setting the tubes in a locomotive-boiler's tube sheets, so that the whole section of the tube surface will form a square. The inventor then proposes to put in a partition at each side of the boiler running the whole way between the tube sheets, and cutting off the space now occupied by water between the tubes and the boiler shell. By this means the inventor will succeed in materially diminishing the space within the boiler not occupied by tubes. By so doing, he says, "you can make steam faster with the same amount of fuel." We suspect that if this inventor of "valuable improvements" had ever passed through the ordeal of running a hard steaming locomotive, and found how much more regularly the engine steamed with a high-water line, he would not have troubled the Patent Office to protect his method of restricting the water-carrying capacity of a boiler.

A NEWSPAPER paragraph is circulating the report that Mr. G. W. Cushing, superintendent of motive power of the Northern Pacific Railroad, was experimenting with an English invention intended to indicate the speed of a locomotive. Being interested in anything that would perform this much-needed service, we wrote Mr. Cushing asking for particulars, and in reply learned that there is no truth in the report. Mr. Cushing said he would be glad to find a practical speed recorder for engines. An invention of this kind would be of real service to railroad companies and to their engineers. Numerous attempts have been made to produce a device that would show at a glance how fast a locomotive was running, but all the inventions have had impractical features about them that rendered them worthless. The man who produces something in this line at once practical and simple will receive extensive patronage for his invention. If half of the ingenuity devoted to the invention of an automatic station indicator had been bestowed upon working out the details of a simple sight speed-recorder, we are persuaded the problem would have been solved before this time.

THE committee managing the branch of the Young Men's Christian Association, located in the Grand Central Depot, New York, are making preparations to form a museum of railroad antiquities, and they have got the leading railroad officers interested in promoting the work of collecting relics and sending them to New York. A pair of locomotive wheels have long hung on the smoke begrimed walls of the blacksmith shop connected with the West Albany Machine Shops, and they were reputed to be the wheels of the "De Witt Clinton," the first locomotive that pulled a train in New York State. Mr. Buchanan, on examining the wheels, found reason to doubt their belonging to the "De Witt Clinton," so he started an investigation, and brought out the truth that they belonged to the locomotive "Experiment," which was built in New York in 1832, and was the first engine constructed with a truck. These wheels have now been cleaned up and taken to the association's rooms, to form a nucleus of the museum. A piece of the strap rail originally used in the construction of the old Mohawk & Hudson Railroad has also been received, and other equally interesting relics are expected soon.

FREIGHT CAR TRUCK OF THE NEW YORK CENTRAL & HUDSON RIVER RAILROAD.

Designed by Wm. Buchanan, Supt. of Machinery and Rolling Stock.

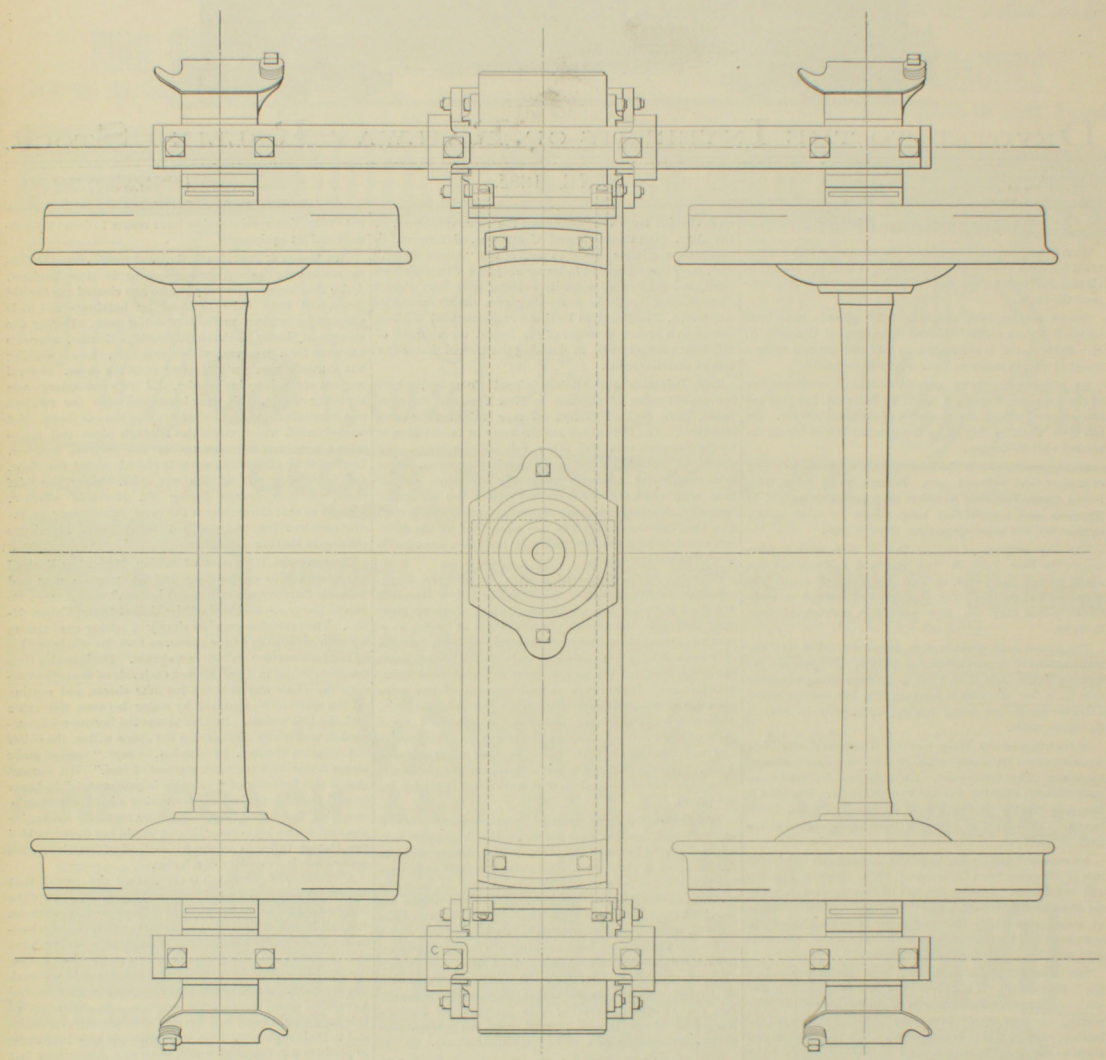


Fig. 1.—Plan.

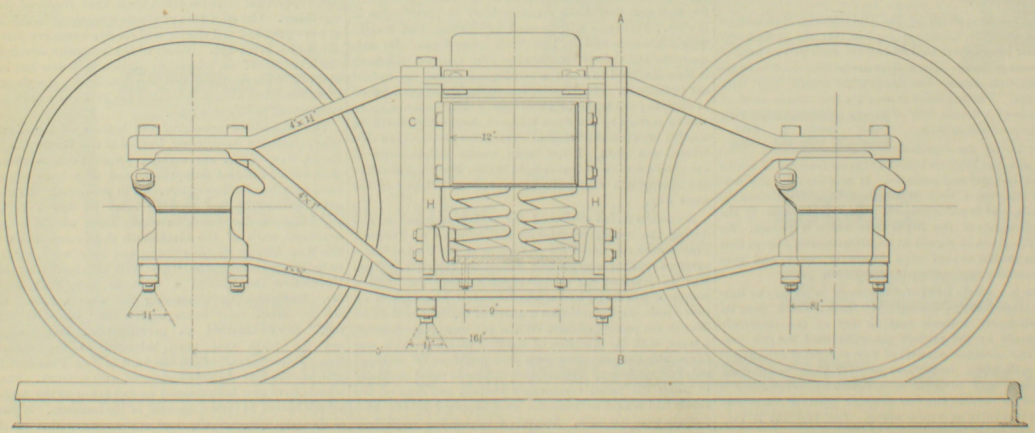


Fig. 2.—Side Elevation.

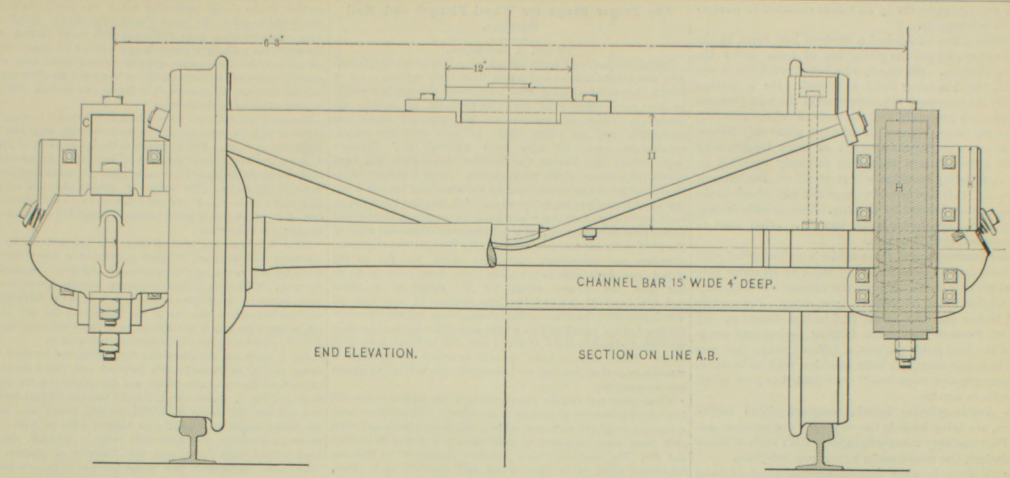


Fig. 3.—End Elevation and Section.

New York Central Freight-Car Truck.

In the annexed engravings we give three views of a new car truck, designed by Mr. Wm. Buchanan, Superintendent of Machinery and Rolling Stock of the New York Central Railroad. Trucks of this description have been placed under 300 new cars recently built, and the intention is to make it the standard freight-car truck of the road. The truck is of the diamond type, but its leading new feature is the binding strap *C*, shown in position in Figs. 1, 2 and 3, and in detail in Fig. 4. It is shrunk on over the upper and inverted arch-bar, and embraces the column casting *H*, the column bolt passing through the strap and column casting and the tie-bar. The function of this strap is to relieve the bolt, and take its place in case of the latter breaking or losing its nuts. All the parts of the truck are made very strong, and without distress will make the trucks carry a twenty-ton load. The upper diamond bar is 4×1¼ inch, the inverted bar is 4 × 1 inch, and the tie-bar 4 × ⅞ inch. These are bound at the columns by a bolt 1⅛, besides the shrunk strap, and bolts of the same diameter are used in fastening the oil boxes. The spring-plank is made of heavy channel iron, which is run from side to side, and is bolted to each inverted arch-bar, and also to each column casting. The bolster is of wood 11 × 12 inches, and is trussed to take a center-bearing. A small distance is allowed between the upper and lower side bearings. The center-plate is 12 inches diameter, and is so constructed that the old style of body center-plate may be used with it should emergency require. The wheels are 5 feet between centers, and the distance between them and the transom is sufficient to permit brake-beam and shoes to be hung.

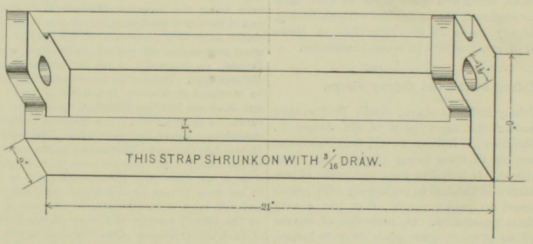


Fig. 4.

Preparing Wood for Car Finish.

Almost all of the light colored woods which are used for the interior finish of cars are liable to become darker by the action of light and varnish. Cars finished in the lightest ash show a very perceptible darkening in the course of eighteen months or two years. The general tendency is to grow yellow, whether the finish be of varnish or oil, dead or bright. The lighter the color of the wood, the longer the time before it reaches an unpleasant depth of color. For this reason much care is taken by some roads to get stock the best which can be obtained. Perfect wood, free from blemishes and light in color, is not easily found. In some sections of the country the difficulty of getting it is so great that an inferior quality has to be accepted. Roads which run through districts abounding in fine ash, are particularly fortunate, as they can get what may be called "water white," clear lumber, free from heart-wood, without paying a higher price for it than for the ordinary grades. Several advantages are gained by the use of very fine, white woods. The first is the greater resistance to darkening, which prolongs the life of the inside finish. Next in importance is the improved appearance of the car and the increase in the light at night. The difference between a dark and light finish, as nearly as can be ascertained without actual photometric tests, is about 60 per cent. On account of the beauty of the ash grain, it is preferred to several other whiter woods. White and rock maple, when first finished, are lighter in color than ash. The white maple has little or no grain, and the rock, waved, or bird's-eye maple turns yellow very quickly. Both of them are in this respect somewhat inferior to ash. Maple contains a considerable proportion of tannic acid, and is easily and quickly stained by the application of iron solutions. When stained properly it appears to hold its color well. Although not very deep in color, it resists fairly well the darkening action of both varnish and light. Other woods are often stained to improve or change their colors. If woods for inside finish can be stained, why may they not be bleached? The question is one of much importance, and experiments in this direction are likely to give valuable results.

In pines, the change of color under the action of light is due to the resin. When this is removed the wood remains white, or very light in color. The resin and the yellow color by the long continued action of soap and water are almost entirely removed. Soda, or potash solutions, followed by oxalic acid, discharges the color and leaves the wood nearly white. Chloride of lime, or bleaching powder, can be used for bleaching. Potash in a concentrated form actually destroys wood fiber and produces great discoloration. A weak potash solution followed by oxalic acid, is a powerful bleach and would be useful on many different kinds of wood. Chemically, there should be no difficulty in removing the coloring matter from the heart-wood of ash, nor in bleaching any of the common hard woods used for finishing. As this bleaching process only needs to be superficial, it may be supposed that the operation will be rapid and easy. After the color has been discharged from the wood the greatest variety of effects may be produced by staining or dyeing. With natural wood the effects obtained by staining are few in number. The yellow browns or reds of the woods prevent the use of a large portion of the dyes which would otherwise be suitable for the purpose. With a properly bleached wood almost any transparent color could be used for a stain.

There is a Japanese method of treating wood for backgrounds of ornamental work, which is well worth attention. It consists in removing the softer portions of the fiber so as to leave the remaining grain in high relief. It is in fact a sort of artificial weathering by which the softer portions are worn away. This method has not been very clearly described, but it appears from the information given that materials like Dutch rushes are employed to scour or grind away the surface. The boards are sometimes quarter-sawed, but more frequently they seem to have been taken nearly through the heart and at a small angle with it. This gives long sweeping curves to the grain. After the required relief has been attained the wood is filled. The final coats seem to be a hard wax finish without a polish. For panels the effect is superb. As a background for metal work in relief, or for carvings, it would be difficult to find anything richer. To produce such work does not appear very difficult. Although the cost of such panels in Japan is very great, they need not be expensive here. The hand labor necessary for wearing down the wood may easily be replaced by machinery. The desired effect would then be obtained quickly as well as easily. Probably the same result could be obtained by the use of the sand-blast or with steel brushes. The first car-builder who introduces this style of ornamentation will have something not only unique but beautiful. In many respects it would be more attractive than the stamped leather and the Lincrusta, now so fashionable. As patterns for stamped leather, these wood designs would be very desirable, and if we can not have the original, it might be possible to get an imitation by the electrotype process which would answer every purpose.

New Haven Railroad Shops.

During a recent visit to the machine shops, car shops and round house of the New York, New Haven & Hartford Railroad at New Haven, we were impressed with the belief that they were the cleanest and neatest shops we had ever seen. Their condition and the general appearance of tools, machinery and rolling stock reflect the greatest credit upon Mr. John Henney, Superintendent of Motive Power, who is quite a young man. The actions of Mr. Henney since he took charge of these shops, have been the subject of considerable adverse criticism by the local press, representing the sentiments of parties opposed to the changes he found necessary to carry out. Under the previous management of the shops, numerous small abuses had grown up, the free and easy want of system had proved fertile to the development of the parasites that love to cling in easy comfort to all prosperous establishments. When he took charge Mr. Henney conceived it to be his duty to run the shops on business principles, and to prevent men from drawing pay which they were not earning. The men around, who imagined the road was run principally for their comfort and benefit, at once developed into the most vigorous kickers. It is surprising what mulish energy men who previously cared for nothing but to be left alone in their career of semi-idleness, will display when their habits are rudely interfered with. Rules that every well-ordered shop have long recognized as necessary for doing business, met with the most violent opposition when introduced here. On nearly every railroad in the country, the engineers and firemen claim that the fairest way of paying the work they do is on a mileage basis. When this was introduced at New Haven it nearly caused a strike that was fermented by the loafers who had been drawing good weekly pay for years while putting the burden of the work upon the younger men.

To carry out reforms in such a place required a vigor and determination, but both were applied and order is rising out of chaos. The railroad company are already reaping the benefit that comes from having work done systematically, and the men willing to do a fair day's work are benefited in the assurance that their work is properly rewarded. It is only the would-be-sinecurist that

suffers, and sinecures are by no means confined to government establishments.

Mr. Henney has established a modern tool room in the machine shop and put the giving out of tools under the usual restrictions. His supply of tools of precision is not yet good, but it is being daily extended. He is getting gradually the necessary machine tools of the best patterns for doing work promptly. All the tools have been grouped, lathes in one place, planers in another place and so on. There are several flexible shafts at work transmitting power to drills and taps that were formerly operated by hand. A grinding machine was at work on the tires of car wheels. This tool is said to turn out two wheels in the time one can be finished by turning. The wheels it was working were steel-tired wheels, but it is often used to grind flattened chilled wheels.

The blacksmith shop of these works is well supplied with power tools and formers, and they work up all scrap into material for new work. They were turning out some very heavy tender axles of selected iron scrap. The centers were 4½ inches and the wheel fit 5 inches diameter. By means of formers they were forging locomotive cross-heads of the four guide pattern, a difficult shape that was got out in a way that left little machine work to be done. These wrought-iron cross-heads are reported to give excellent results in service.

Three double-cylinder hoisting engines, 6×10 inches cylinders, are being built in the shops for coal-station service. They are very compact engines, with vertical boiler and cylinders, the whole set in a cast-iron bed-plate.

All work done is after interchangeable standards, and the intention is to make cylinder heads, pistons, cross-heads, spring-trucks, boxes and other parts so that they can be put on any engine of the same class without fitting. The progress already made in this direction in these shops has proved of great service in several instances.

Car Building at the Old Colony Shops.

At the Old Colony Railroad shops, South Boston, they are building, under the supervision of Mr. James N. Lauder, Superintendent of Rolling Stock, four handsome passenger coaches, one of them being a parlor car. One of the cars is finished. It is 60 feet long and seats 64 passengers. The interior is finished in mahogany with panels of burr ash fastened to papier maché, that has a very pleasing and artistic appearance. On each side of the car there are 20 windows of heavy plate glass, 26 × 36 inches. The seats are upholstered in old gold plush. About two-thirds of the car is occupied by seats of the ordinary pattern. At one end is a spacious drawing room, with six revolving stuffed arm chairs, three on each side of the aisle. The floor is covered with a heavy Brussels carpet, and the whole apartment has a particularly comfortable appearance. Between the drawing-room and main compartment of the car are a lavatory and a Johnson heater. A roomy saloon, much larger than those on ordinary passenger cars, is connected with the lavatory. The trucks that carry this car weighs over five tons each, and are put together in a very substantial manner. The wheels are 42 inches diameter, with iron centers of an English pattern and steel tires.

Four passenger cars and one drawing-room car, of the same body dimensions as the one described, are being built for the company at the Wason Manufacturing Works, Springfield, Mass.

During the winter they have built 27 box-cars, 33 feet long, and they are now getting out the iron work for 25 more cars of the same make. The transom of these cars is of channel iron, made in a form so that each transom is of interchangeable size. The Pratt patent door is used. A truck, designed by Mr. Lauder, is used, which comes very close, in its general build and dimensions, to that designed as a standard truck by the committee of the Master Car-Builders' Association. A few points are different. This truck has elliptic springs and an iron bolster with swing center. The wheels are spread sufficiently to provide room for placing the brake between the wheels as a convenience for a power-brake attachment.

ENGINE 95, running between New Haven and Springfield, and belonging to the N. Y., N. H. & H. Railroad Company, was recently subjected to exact tests for a week to ascertain the exact consumption of coal. The engine pulled six passenger cars, averaging 25 tons each, or 150 tons gross, a distance of 59 miles in one hour and thirty-five minutes, making three stops on the way. Taking 10 minutes for stopping and slowing up, and leaving 85 minutes for running, requires a speed of 41.6 miles an hour. This work was done with a fuel consumption of 34 pounds per mile. The engine has cylinders 17 × 22 and drivers 68 inches diameter. The fire-box is of the Buchanan water-chamber make.

The Proper Shape for Wheel Flanges and Rail Sections.

BY WM. E. PARTRIDGE.

During the past year much attention has been given to this subject, and several articles and papers have been written upon it with a view to determining what form would give the best result. In the April number of the CAR-BUILDER an article appeared in which an analysis of Mr. Forney's paper was attempted, and an effort made to show that the recommendations made by him were unwise. Mr. Forney's paper before the Master Car-Builders' Association has been considered a résumé of the whole subject. After a careful investigation of the mutual action between the wheel and the rail it appears that the subject has not been exhausted, and that there yet remain very many conditions which have not received attention and which need investigation. It is with the hope of placing some of these before the car-builders of the country that the accompanying drawings and description have been made. So far as the writer has been able to learn, the only data used in deciding upon the proper shape for the flange of a wheel and the head of the rail has been sections of new and old wheels and rails, the wheel sections being taken radially through the tread of the wheel, and very little more than this has ever been attempted when selections of wheel and rail sections have been made. From some sections recently proposed as standards it would appear that even this very moderate course of investigation had been omitted.

When wheel and rail are placed together, the section of the rail is always supposed to be tangent to the wheel. Old rails have been compared with old and new wheels, and worn wheels and worn rails have been compared to show the effect of wear in producing fits. The final conclusion reached appears to be that the important point is to have wheel and rail fit each other, and that a square-headed rail, with very small curve at the angles, is, all things considered, the best, the only drawback being the supposed difficulty in making the fillet at the root of the wheel small enough to fit this form of rail. This conclusion seems to be premature and the result of an examination of wheel sections and rail sections rather than a complete study of the problem, or a record of the service performed by wheels of different type. This limited investigation of the subject is not to be wondered at, however, as it is one of great difficulty. Time and labor are involved in making the sections, which must be accurate to be of service. The obstacles in the way of collecting statistics are almost insurmountable. The wear of a rail may be divided into two parts—that caused by the tread and that induced by the flange. All wear between the head of the rail and the tread of the wheel takes place theoretically at the tangent line. It has been proved by experiment that this line where wheel and rail meet actually spreads out into a band. Writers on the subject consider the wear at this point as a product of the crushing pressure of the wheel on the rail, and of the slipping and grinding action of the drivers, and the slipping, skidding or sliding of the car wheels. The side wear of the rail is apparently due to an entirely different set of causes. The crushing action of the wheel on the rail is absent, and, from considerations which will be presented further on, it appears that except under certain conditions the wear between the side of the rail and the flange of the wheel is almost nothing at the point where they are tangent, the rail wear taking place in front or behind what may be termed the tread. To properly study the question therefore, it appears reasonable that that portion of the flange projecting below the top surface of the rail should be made the subject of careful study. Until this is done, many essential facts connected with rapid cutting of rail heads and the making of sharp flanges will not be clear. For the purposes of this article what may be termed tread wear will be entirely neglected, as the form of the tread and its effect upon the rail has little or no connection, so far as can be seen, with what, strictly speaking, is flange wear.*

The portion of a 33-inch wheel which it is proposed to study is not far from 12 inches long, about 2 inches in breadth, and from 1⅛ to 1⅝ inches in depth. The segments in the upper parts of Figs. 1, 2, and 3 are side views of this part of three different wheels. The shaded ovals in the same figures are plans or horizontal sections through the flange. The larger or outside plan is a section on *C D*, which is the top of the rail. The inner one is taken on the line *A B*, which is in a plane passing through the points at which the gauge is measured.

These diagrams are of somewhat odd appearance, but they represent accurately all of those portions of a wheel which can touch the rail under any circumstances, either on a straight line or curve. With each of these horizontal sections are vertical sections, taken at the points marked 1, 2, 3, 4, in the side view, and showing the mutual relations of the flange and the rail at these points when the axle is at right angles to the wheel, and the wheel is in the position shown by the normal cross-section.

Fig. 1 gives an elevation and two horizontal sections of the flange used by the Pennsylvania Railroad, and Fig. 4 shows vertical sections through both wheel and flange taken at the points 1, 2, etc., of Fig. 1. In sections 1, 2 and 3 the short dotted horizontal line indicates the points at which contact would take place the flange should be forced into contact with the rail. Fig. shows an elevation, and horizontal sectio through, the flange used on the Lehigh Valley and the Delaware & Hudson anal Co.'s roads. Sections of this flange taken as in the previous case are shown in Fig. 5. Here the dotted line is drawn at the point at which the gauge is measured and corresponds with the inner section of Fig. 2. Fig. 3 shows a very slight modification of a flange made some years ago by the Lobdell Car Wheel Co. of Wilmington, Del., for a Southern road. Its peculiar form was selected for the purpose of reducing the danger of running off to a minimum. In the cross-sections, Fig. 6, this flange is shown in connection with the Lehigh Valley rail indicated by solid sectioning, and the Pennsylvania rail indicated by a heavy dotted line.

The first fact to be considered is that when a wheel and rail fit each other at the line where they are theoretically tangent the flange wear at the point must be infinitesimal, since the movement of the flange against the rail is only that due to a motion which is equivalent to a revolution of the flange around an axis passing through the tread, the flange for the instant revolving about the tread instead of around the center of the axle. This being the case, the wear at the lowest part of the flange in contact should be greatest, and that nearest the tread smallest. As no traces of this kind of wear are discoverable in actual service, we may neglect any wear that takes place at the normal section. Study of the flange plans and side views will show that flange wear must be produced at points

* Where the difficulty of making a geometrical section of a flange is considered too great, this somewhat tedious process may be avoided by taking a putty cast of 12 or 13 inches of the flange and tread of the wheel and taking a plaster of Paris cast of this, which may be planed down to obtain the required sections. The truth of many of the points made can be ocularly demonstrated by taking a short section of rail and placing it upside down on the top of the wheel. The rail will then move on the wheel in a manner alonagous to that of the wheel on the rail.

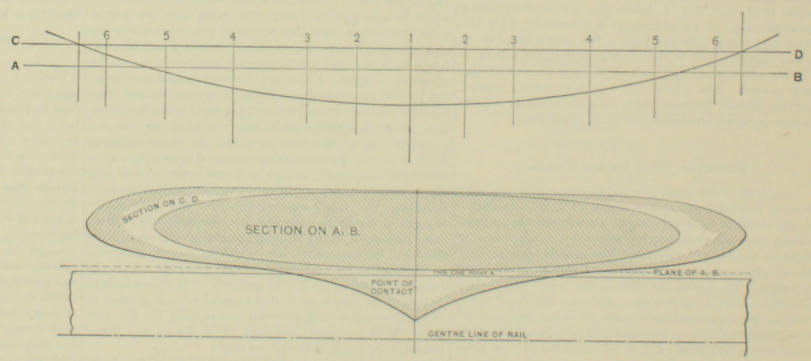


Fig. 1.—Elevation and Horizontal Sections of Pennsylvania R. R. Wheel.

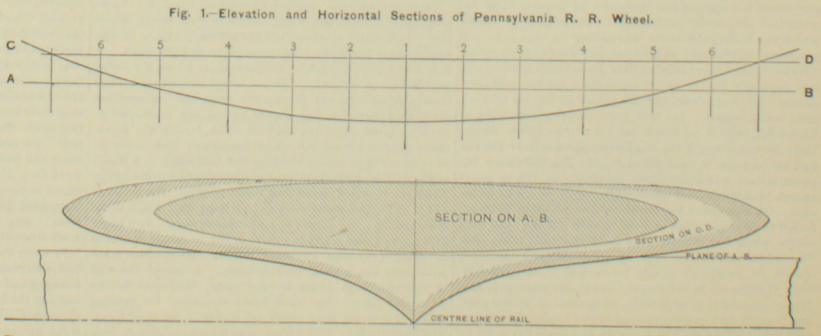


Fig. 2.—Elevation and Horizontal Sections of Flange Used on Lehigh Valley, and Delaware & Hudson Canal Co.'s Roads

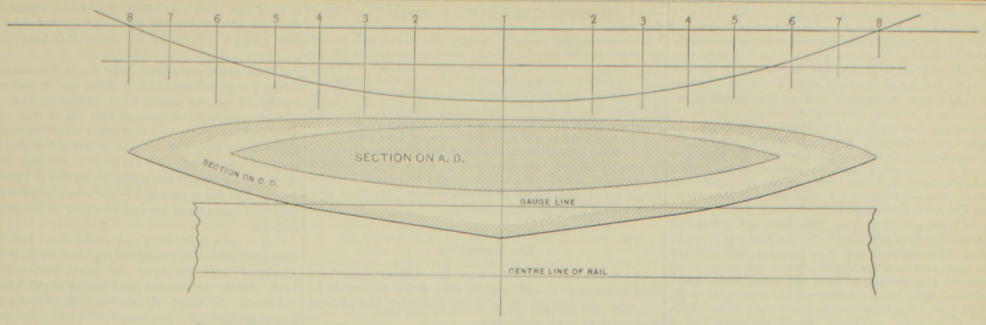


Fig. 3.—Elevation and Horizontal Section of a Flange made by Lobdell Car Wheel Co.

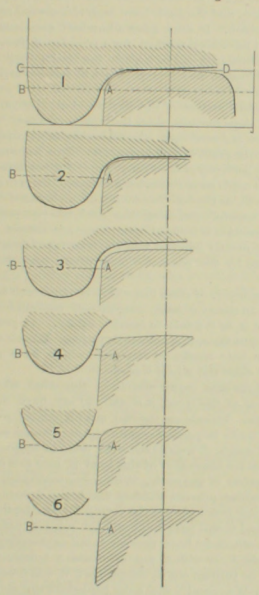


Fig. 4.—Pennsylvania R. R Wheel and Rail. Cross-Sections through Points 1, 2, 3, etc., of Fig. 1.

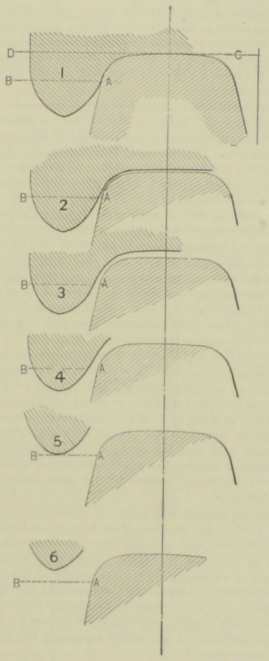


Fig. 5.—Lehigh Valley Wheel and Rail. Cross Sections through Points 1, 2, 3, etc., of Fig. 2.

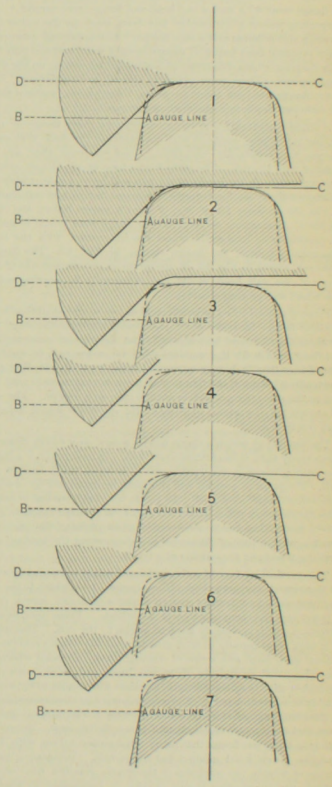


Fig. 6.—Cross-Sections through Points 1, 2, 3, etc., of Fig. 3, in connection with Lehigh Valley and Pennsylvania R. R. Rails.

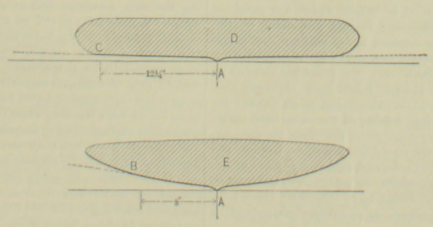


Fig. 7.—Sections of Vertical Sided and Flaring Flanges.

in advance of, or behind, the tread or center line of the actual tangent. The greater the distance at which contact takes place, the greater will be the motion of the surfaces in contact, and we may presume the more rapid will be the wear.

Comparing the three horizontal sections with each other, we find that shown in Fig. 2 is a sharp-pointed oval with convex sides; that in Fig. 1 has broader ends and straighter sides than the other, while that in Fig. 3 has sharp ends with sides next the rail forming a considerable angle with each other. These sides are but slightly curved. It will be noted that all the sections are of nearly the same length, that in Fig. 3 slightly exceeding the others; this is due to the fact that it is 1⅞ of an inch deep, the others being 1¾ inches. While the last section, Fig. 3, is tangent to the rail at a single point, Fig. 2 apparently bears for ¼ of an inch in the full-size drawing, while Fig. 1 is in contact for a distance of nearly 2 inches. With this section flange wear would apparently begin, even on a straight line, if the wheel for any cause be sharply crowded against the rail. This is evident from the fact that it touches the rail in front of and behind the tread. In this respect, Fig. 3 seems to have a considerable advantage, since, in order to make the flange touch the rail at a point in advance of the tread, it is necessary that the rail be inclined at a large angle to the wheel.

The more nearly the plan of the flange approaches the oval in shape, the nearer to the tread is the point of contact with the rail on curves, and the same is true when one wheel is crowded against the rail on a straight line by a larger wheel on the same axle, or by a truck which is out of square. When the oval has a broken back, as in Fig. 3, the maximum inclination between the wheel and rail is obtained without causing the point of contact to travel forward. This principle is illustrated in Fig. 7, which, however, is not made to scale, but is sufficiently accurate to show the condition. A horizontal section of a flange which is nearly vertical on the side next to the rai is shown at *D*. This gives a plan having almost straight lines for its side. When a flange of this kind is forced against the rail it is in rubbing contact for the greater portion of its length, or from *A* to *C*, even on a straight line. It can only accommodate itself to very slight angles unless it forces the other wheel over, in doing which it acts at a disadvantage, as power is applied to the short arm of a lever. The dotted line shows the greatest angle which the rail can assume without sliding the wheel sidewise on the tread. At this point the friction is great, because the surfaces are passing each other rapidly and the motion of the wheel is particularly unfavorable because it is downward upon a surface which may not be nearly vertical, and has a direct lifting reaction on the wheel. This, of course, makes the danger of climbing very great. At *E* in the same figure a nearly oval flange plan is shown. The dotted line shows that the rail can make an angle with the wheel nearly four times as great as in the previous case, and that at the same time the point of contact *B* with the rail will be only two-thirds as far from the tread as in the previous instance. The plan in Fig. 3 is similar to *E* in Fig. 7, but from an actual wheel. The three sets of cross sections, Figs. 4, 5 and 6, deserve special attention because they illustrate the angles of the wearing surfaces and directions of the resulting forces, and approximately the areas of the surfaces in contact. Considered in this light the sections of the Lehigh Valley, or Delaware & Hudson, flange and rail ap-

pear to be most advantageous, since the points of contact have a considerable area, and the surface resulting from wear cannot become vertical. This, coupled with the short distances between the points of flange wear and the tread, admits of the conclusion that a sharp flange could not be made by the wear of such a rail and wheel. In the Pennsylvania rail and wheel, which have vertical sides, as we have seen, the points of wear are thrown well in advance of the tread, while the surfaces in contact are small, and it would be expected that the flange wear would be considerable.

The dotted lines between the flange and the rail head in the cross sections show the shortest distances between the flange and the head of the rail, and indicate the point at which contact would take place were the wheels pushed to one side or inclined sufficiently to the rail. In order to save space all the sections have been reduced to half of full size.

In regard to the amount of flange wear there are no statistics at hand other than those which the writer has been able to collect for himself. From the inspection of an immense number of old wheels at various points which had been condemned, he has found that unifor nly 24¾ per cent. of them had sharp flanges which were sufficiently bad to cause condemnation. Reports from the Lehigh Valley seem to indicate that the percentages of the wheels removed on account of sharp flanges amounted to 5 per cent. of the whole number. This would appear to show that the deductions just made in regard to flange wear with such a rail head and flange were correct.* In inspecting wheels a distinction has been made by the writer between a sharp flange and a thin flange. A number of examples have recently been found of flanges deeply worn and too thin for safe running which still retained their original outline on the side next the rail. These were properly classed as thin flanges. The sharp flange has been taken to mean those having vertical sides of sufficient depth to make them dangerous.

A slight investigation of the geometry of a sharp flange or one having a [vertical surface] will demonstrate the fact that such flanges are constantly undergoing wear wherever they are in contact with the rail. The same is also true of all flanges which approximately fit the heads of the rail and have a side which is nearly vertical; as, for example, the worn flange and rail shown in Fig. 29 on page 12 of Mr. Forney's paper before the Car-Builders' Association, is one in which flange wear would be going on constantly as long as the wheel was in contact with the rail. The same is true of the flange shown in Fig. 42. The flange, however, shown in Fig. 43 of the same paper, on account of the angle of the rail head would not necessarily be wearing unless the wheel was passing a curve.

From geometrical considerations alone it would seem that with vertical flanges the better the fit the greater should be the wear. On straight lines it might be supposed from theoretical reasons that the flange which fits the vertical-sided or worn rail is wearing even faster than it does on curves, because both the leading and the trailing halves of the flange may be in actual contact with the rail at the same time, which is not the case on a curve. The aid of models may be needed to settle all the questions which arise in this connection.

The method in which a sharp flange wears on a curve deserves more study than it has hitherto received. In running on to a curve the leading wheel on the outside rail is jammed hard against the rail. The point of contact will probably be found in Figs. 4 and 5 somewhere near section 3. In yards, or short curves it might pass forward to a point between 3 and 4, or perhaps reach 4. Just where it would be can be ascertained from plotting the curve of track against a pair of flange plans representing the leading and trailing wheels on the outside of a truck.

The vertical surface of a sharp-flanged wheel is ground or worn in lines which are epicycloidal in character, but which to the eye are represented accurately enough as parts of circles struck from a point near the circumference of the wheel. These lines have a direction which is sensibly at right angles to the rail. This wear, if it took place equally in both directions of the wheel's revolution, should show itself as a series of crossing lines. On such wheels as have been soft enough to show the lines, and have worn deep enough to give them some length, the lines were found to be parellel and in one direction only. The most natural and obvious deduction is that trucks go around curves cornerwise. The author has by frequent experiment demonstrated this to be the case. But on the other hand he has found that many trucks pass curves with both outside wheels hard against the outer rail. Differences in the gauge of wheels, the condition of the track, relative sizes of the wheels, and many other things, render it impossible to reach a general conclusion in regard to the behavior of trucks on curves. If the trailing wheel of trucks is sensibly slacked from the outside rail, and if all trucks take curves cornerwise, only the leading half of the leading flanges of a truck may be expected to wear. Following this up still further, it might be expected more sharp flanges should be found on the outer axle of a truck than on the inner one. Numerous observations on different roads make this quite probable. Here again figures are needed before conclusions can be reached. This, however, is a matter of less importance than the fact that the most rapid wear takes place with a vertical flange in contact with a rail at the maximum distance from the tread.

From the illustrations given the problem of selecting a flange which shall give the greatest protection against climbing the rail, the minimum danger from wearing sharp and the least wear both to itself and rail, will have some new light thrown upon it; and unless new conditions are discovered, the problem should not be difficult. The drawings show that a flange having a large angle, by reason of the fact that it is freed from the rail almost at once, and has only a short distance of contact near the tread, has many advantages over any other form. Though its advantages do not seem to be so marked with the straight-sided rails as they are with those having the sides set at an angle, yet such a flange will manifestly punish the straight-sided rails much less than a flange with a vertical or nearly vertical surface. The plans and sections of Fig. 3 appear to indicate that a flange composed of two straight surfaces, as has been proposed by Mr. Lobdell, would form a most effective flange, and would be exceedingly free from wear. The first angle, of course, would be considerably less than that shown, while the second would take the place of the usual fillet or curve at the bottom of the flange.

It will be seen that the question of the fillet at the root of the flange has very little to do with the wear of the rail or of the wheel. The part affected by the fillet leaves the rail within an inch or two of the tread and is usually, as can be shown from the cross sections, lifted above contact even with the corner of the rail before it has had time to produce any influence. As a rule the intense wear begins further out and lower down on the flange and the fillet is obliterated later in the course of destruction.

The subject is by no means exhausted, but the writer hopes that by pointing out some of the directions in which it needs careful investigation, and by indicating the points for comparison and the means for so doing, some additional progress may have been made toward a solution of the question.

* Since writing the above, an examination of wheel returns, and an inspection of a large number of wheels taken off from the cars on the road, leads to the conclusion that but 3½ per cent. of the wheels are taken out for flanges which are actually sharp.

Car Inspection.

The conditions under which cars are exchanged from one road to another, though usually supposed to be settled by the rules, are actually in a most unsettled and unsatisfactory state to all concerned.

Those who interpret them in a lax manner are no better satisfied than those who wish to apply them with the most rigid interpretation. Almost every car-builder sees his road subjected to unnecessary expense, delays and annoyances which are traceable in various ways to the exchange system and its abuses. Theoretically the exchange of cars under the rules is perfectly fair, and should be attended with no difficulties.

Regular running repairs are made by the roads on which the car happens to be when they become necessary, while the wheels are supplied at the expense of the owner, at a specified rate. This perfectly fair and simple method of conducting the interchange of cars is no longer possible. The rules which appear to cover all cases no longer do so. If they are enforced, as they frequently are, the penalty always falls on the innocent party. And what is of even more importance than the injustice, the traffic is interrupted and general managers have to interfere, and, at the risk of accident, forward defective cars over their roads. Not a few of the evils of car interchange arise from the diversity of opinion among car inspectors. There are very few points at which there is a uniformity of practice, and it was at one time hoped that joint inspection would, to a great extent, remedy the evils of the system.

While this brought about a great improvement, there were many things much too deep to be reached by any convention of car-builders. The officers of the roads appear to be ignorant of the evils which have grown up under the system, and of the enormous expenses which the abuses entail. The almost universal effort to get materials and supplies at the lowest possible figures, regardless of quality, has produced a result which, to say the least, was little foreseen by the purchasing agents or superintendents.

It has been repeatedly stated by persons connected with roads owning line cars that their true policy in purchasing for the lines was to buy the cheapest cars which could be obtained, regardless of pattern, workmanship, strength or durability. This is a practical recognition of the fact that the cars are on foreign roads for the greater portion of the time, that the running repairs while at home are but a small percentage of the total which they require, and that of the actual repairing the owner pays for a small share.

The saving in first cost effected by the cheap and shoddy cars is a very large one. On a contribution of 500 cars to a line a saving of $50 per car represents $25,000. On foreign roads the repairs are made according to the rules. Cheap wheels are replaced by others which are good, at the standard price. Running repairs are made by the roads on which the cars happen to be without cost to the owners, even though these are many times greater than those of an honestly built car. So great has the evil of poor wheels become, that some roads have seriously considered the proposition to buy the cheap $5.50 wheels for the purpose of replacing others of the same kind under foreign cars. This, however, does not meet the case entirely. The owner of the cheap car saves the trouble and delay of renewing the wheels, and no small portion of the actual cost of running repairs, in addition to the interest on the capital which he would have otherwise expended.

In one sense the inspection, as at present carried out, is a failure.

The road which is dishonest or careless throws a heavy burden upon all roads with which it connects. And unfortunately these roads have no means of retaliation. The same is true of roads maintaining an absurdly fine inspection,

By means of it they throw the bulk of repairs upon all roads with which they make connections. In a through line from West to East, composed of a dozen roads or more, there will be found a great variety of policy and practice in car repairs. Rather more than half may be classed as disposed to be fair. They are willing to keep their rolling stock in a condition which makes it safe to run. There will be three or four that propose to "skin" and make only such repairs as may be absolutely necessary to keep their cars on the road. Lastly there will be one or two roads which will insist on fine inspection. Upon any system of roads thus constituted most of the repairs will fall upon those roads which wish to keep their rolling stock in a fair condition. In addition to repairing, these roads must also burden themselves with the cost of transferring a vast quantity of "time" and bulk freight. The way in which this happens is very simple.

A road which cares very little for the condition of its rolling stock forwards a lot of grain east in cars which are not fit to run, or which need serious repairs. Easy inspectors pass them along until they have half completed their journey, and a road is reached which calls for a fair inspection. They are, of course, cut out of the train and the load transferred. This is done at the joint expense of the roads meeting at the point where the inspection was made. The car is returned to the owners for repairs and the two roads have to pay the cost of transferring the freight.

This is but a small item and would cause but little complaint in itself. The exasperating feature is, that in due course of time, the same car comes back with another load, with its defects increased by the round trip which it has made. In hundreds of cases after loads have been transferred and the cars returned to the owners for repairs, the same cars have come back loaded but without the repairs, and the loads have been transferred four times in succession. In some cases a hundred cars out of five hundred have been marked for a transfer of freight. As long as these cars can be kept on the tracks they are sent forward loaded, and the repairs are at last made by other roads in self defense.

The actual owners of the cars are not always most at fault in these matters, since the broken cars may be loaded by others and sent east. Another class of car makes difficulty at the point of fine inspection. This embraces those that are perfectly safe to run, but have minor defects. Two or three roads have inspected and hauled them in perfectly good faith, as the defects are not of a character to make the car unsafe. Reaching the road where a particularly fine inspection is insisted upon, these are thrown out. It very frequently happens that the transfer of freight has to be made by the company over whose road the car has come.

The question of close inspection is one which has many sides. In theory a large majority of car-builders are in favor of it, as it tends to greater safety. As practiced at the present time, it is eminently unjust. Wheels are taken out for hair cracks in the plate which have evidently existed since the wheel was cast.

We have seen many wheels of this kind, which, from the wear of the tread, it is safe to say have made long mileages. Wheels are thrown out for cracks so minute, that to make inspection certain the cars would have to be turned upside down and the work done in broad daylight. The plea for inspection of this kind is, that it is conducive to the safety of the roads. While close inspection does, to a great extent, prevent accident due to the failure of rolling stock, this is not always the reason for its adoption. Card a car and it will pass unquestioned with a defect which would otherwise have thrown it out as dangerous. For example, a car with a nut off from a bolster truss rod, would be thrown out as dangerous if it was found without a card. We recently saw a car carded for this defect which had been in service four months. Cars are cut out for "bad ends" when the defect shows as a mere insignificant crack. We have seen a flat car loaded with rails cut out because the load had shifted 18 inches in handling and the rails projected nearly as far as the draw-head. This entailed handling on the part of the delivering road which was entirely unnecessary.

A counterbore is often marked as a loose wheel, and two half cracks in brackets have thrown a wheel out. Oil coming through a porous hub is often mistaken for a loose wheel. Sand cracks as old as the wheel itself have also caused rejection. We have seen a pair of wheels taken from under a car for cracks, which under a magnifying glass proved to be the remains of fins which had been broken off. Sometimes inspection has been carried so far as to reject cars coming home for repairs. The objection to be found with the very close inspection is, that it is not carried far enough, and is one-sided, and cars would pass a night inspector when they would be thrown out in the daytime. If it is to be applied at all, it should be adopted by all the roads. It must be applied intelligently and should be consistent. If one wheel is to be scraped and searched with a glass for old hair cracks, all wheels must be treated in the same manner.

If a cracked bolster is unsafe to run without a card, it is equally unsafe with one. The excuse for using or accepting the card is to secure the road taking the car from the expense of the repair. This is true, but it is also true that if a wheel fails the owner will have to replace it. There are plainly other reasons for such critical inspections in some directions, coupled with laxness in others. The wheels with the hair cracks do not open suddenly nor break without warning. Attempts have been made to show that this was the case, but we think the demonstrations have not been satisfactory. To inspect cars in the manner which many car-builders advocate is out of the question at the present time. No road in the country has its rolling stock in such a condition as to warrant it, for traffic would be suspended and at many points practically stopped.

That it is desirable to keep cars in perfect condition is not to be doubted. This must be accomplished, however, by the roads undertaking a thorough system of repair of

rolling stock, and then insisting upon rigid inspection at all exchange points. The exchange of cars and the system of repairing foreign cars calls for the most careful investigation from the superintendents of the roads. And it would be well if the through lines could come to some mutual agreement in regard to the exchange and repairs of cars which they could maintain. If one or two roads take a car in good faith and haul it the whole length of their lines, it should not be thrown out, upon delivery, if the defect has not increased.

The judgment of two experienced car-builders should settle the question, and cars which they have taken should be accepted as against the opinion of another who demurs on the ground of minor and perhaps trivial defects.

While joint inspection has done much to facilitate the exchange of cars, it has not remedied all the evils of the system.

It seems that it should provide some arrangement at the inspecting points, by which A should be prevented from receiving a car intended for B, but which B will not receive from A after the latter has hauled it the whole length of his line. In such a case the intermediate road has to make the repairs, which should fall upon the owners. For example, a road delivering cars to a road in the State of Massachusetts, may take, through a joint inspector, cars without a step, or lacking some of the particulars called for by Massachusetts law. Before these cars can be delivered, the repairs must be made by the intermediate road. In justice, such cars should have been turned back to the owners, or steps, brakes, etc., should be put on and charged to the owners.

The plan strongly advocated by some of the oldest car-builders in the country is to charge repairs of all kinds to the owners of the cars. Under such an arrangement cars would not be turned back for trifling defects. They would have the needful repairs made, which would be charged to the owners. The only exceptions to this rule would be in cases when the hauling road damages the cars through accident or careless handling. On the mileage basis, this plan would work no hardship. It would, if adopted, revolutionize railway rolling stock, and would gradually bring it into first-class condition by making for the interest of every road to keep up its own repairs. W. E. P.

New England Railroad Club Meeting.

PRESIDENT'S INAUGURAL ADDRESS.

At the meeting of this club held at Boston on April 22, President A. H. Marden, of the Fitchburg Railroad, presided. On taking the chair, President Marden thanked the members of the club for the honor they had conferred upon him by electing him president. He felt conscious of heavy responsibility in following one who had been so successful in bringing the club to its present degree of usefulness; but he was anxious to help the club in the coming year to progress in a way worthy of its past record. There are many vital questions that ought to be discussed, and railroad mechanical topics are every day becoming more important. Railroad managers are looking for decisive action on the part of car builders regarding standards. He thought it was the duty of the members of the club to put themselves on record in regard to automatic freight car couplers and everything interchangeable about a car before the meeting of the Master Car-Builders' Convention. With the high talent of the members backed by the influence of the superior railroad officers, it will be the fault of the association if they do not at the approaching meeting succeed in solving some of the difficult problems presented to their attention in past years.

After some formal business had been disposed of, the president read a letter from Mr. Forsyth, Secretary of the Western Railway Club, directing attention to accompanying prints of a

STANDARD FREIGHT CAR TRUCK.

Mr. Adams, Boston & Albany Railroad, explained that Mr. Forsyth is chairman of a committee appointed by the Master Car Builders Association last year, for the purpose of designing a freight car truck, and that the print is the substance of their efforts. He believed most of those who had seen the design had given it their approval. The design gives two styles of truck that are arranged with cross channel arms, so they can be used with either a swing bolster or a rigid bolster. He thought it was a very good design.

The President intimated that the next business was a discussion on

ROLLING STOCK FOR SUBURBAN PASSENGER TRAVEL.

Mr. Lauder, Old Colony Railroad—This, gentlemen, is an important topic, and ought to draw out some discussion. It has been suggested that Mr. John Kent would be a good man to open the discussion.

The suggestion from Mr. Lauder having brought suddenly to Mr. Kent's recollection the fact that a man was waiting outside to see him,

Mr. Lauder was forced to fill the void created, and open the discussion himself. He thought the front end of the tram was the right part to begin the discussion with. His opinion was that to-day there is not, in this country, a locomotive properly designed for suburban traffic, an engine that will run equally as well one way as the other and avoid turning. Mr. Richards of the Boston & Providence Railroad has some engines that were designed for suburban traffic, and Mr. Lauder expressed the hope that Mr. Richards would give them particulars of his experience with the so-called Forney engine. There is another engine, a modification of the Fairlie locomotive, used to some extent for suburban traffic. His idea of an engine for this kind of service would be, one with four drivers placed forward of the fire box, and a two-wheel truck in front and another under the footboard. Such an engine would run with equal facility either way. Then he would have an eight-wheel tender behind, of sufficient capacity to carry all the water and coal required. In the Fairlie engine the amount of fuel and water carried is limited, which he regarded as detrimental to that style of engine.

Mr. Stewart, Fitchburg Railroad, had considerable experience with the Forney engine on suburban traffic. What he understood to be suburban travel was the travel that settles around Boston within a distance of five miles, or a little farther. He did not know of anything so good as the Forney engine for this purpose. The supply of fuel and water was limited, but the engines he had experience with were capable of taking fifteen loaded passenger cars a distance of fifteen miles. He believed the proper engine for this work was a solid, compact engine, with cylinders 16 × 20 inches, having four driving wheels and a four-wheel truck. This engine will go round any curve where we can run a short car, and will run equally well in either direction. Objection is raised to running an engine backwards, but you may say that the Forney engine runs backward when it runs ahead. With engines of this type he had seen no trouble with flanges cutting, and the cab can be made so tight that the engineer and fireman are as comfortable in winter as they would be in their own homes. The stack being so close to the cars, the eddy which draws the sparks down on the train is avoided.

Mr. Richards, Boston & Providence Railroad, said they had from 50 to 60 locomotives used exclusively for suburban traffic, and probably from 160 to 275 cars. Most of this business has been done by what we call cast-off locomotives; but the times now require something different, and the Forney engines seem to be doing considerable of the suburban traffic. These engines are necessarily very heavy, as they represent the locomotive and tender combined. Some of them are made to carry four tons of coal and two thousand gallons of water, making about 140 miles a day without taking coal. That seems all that is required of such engines. Mr. Richards commented on a Great Eastern Railway of England locomotive, recently illustrated in the *Railroad Gazette*, and thought it had several good points for suburban traffic. He believed, however, there was nothing in use in this country equal to the Forney engine.

Mr. Griggs, Providence & Worcester Railroad, was pleased to hear the expressions of opinion about the Forney engine, for his road was the first in this district to use them. That was at a time when the engine did not seem to have any friends around, and the people thought they were going wild to fetch such an engine around here. They now have six of them in use, and they work so satisfactorily that the road could not get along without them. They are economical on fuel, light on repairs, and easy on the track.

The President called on Mr. J. A. Coleman, a mechanical expert of Providence, to give his views on the subject under discussion.

Mr. Coleman spoke at considerable length relating his experience with a Wootten locomotive in Italy, where he had helped to force the engine into service, much against the wishes of the Italian officials. He thought the Wootten engine the prince of locomotives, and considered railroad men were wrong in not adopting modifications of that engine for all kinds of railroad operating. He made some incisive remarks about the tendency of locomotives pulling passenger trains around Boston, to fill the cars with smoke, dirt and cinders. From what he had seen of quick handling of suburban passenger traffic in the crowded cities of Europe, he believed our railroad companies would save time and expense by building their passenger cars with side doors, so that people could get in and out quickly.

Mr. Lauder could not agree with the last speaker about the merits of the Wootten locomotive. He did not think it was practicable to burn bituminous coal to advantage in so shallow a furnace. The problem we had before us in the last four years is how to get an engine to make steam without a heavily forced draft. The forced draft raises the light particles of coal and coke, drawing them through the flues. No one has entirely overcome this difficulty. We are making some progress in the direction of perfect combustion and the restraining of spark-throwing; but it is doubtful if coal will ever be burned in a locomotive in such a perfect manner that every particle of the coal will remain in the furnace till it is consumed.

Mr. Richards said he had been looking over a great many illustrations of English locomotives, and found no screens for keeping down the dirt. He knew that when English mechanics brought up on English roads came to this country they always adopted American appliances and dropped those they had been accustomed to, but at once began to complain that we do not keep down the dirt. Why is this?

Mr. A. M. Waitt, Boston & Maine Railroad, had, when on the Eastern Railroad, seen a great many experiments made by the Master of Rolling Stock in restraining spark-throwing, his principal auxiliary being a brick arch set at an angle of 45 degrees, and arranged so that the brick was opposite the lower row of flues. He rode from Portland to Boston on an engine fitted in this way, and during the fast run of 3¼ hours he was satisfied the engine did not throw enough sparks to fill his hat. He thought any one interested in the matter would conclude that the device was a thorough success if he made a trip on any of the locomotives so equipped.

Mr. Adams was pleased to hear that the criticisms hit mostly on the locomotive fellows; but Mr. Coleman's suggestion of having many doors on the sides of suburban cars did not strike him favorably. He did not like to see a car all covered with doors. From the way they got passengers out of the cars with end doors alone on the elevated railroads of New York he concluded that side doors were not necessary for suburban travel. Besides the change would entail many other alterations with platforms and station arrangements. Then it would interfere with the interchange of cars on road and suburban travel, and cars would have to be fitted up exclusively for the latter business. The advantage gained would never be sufficient to make up for the inconveniences, and there is no likelihood of the change ever being made. Mr. Adams liked better to hear the cinder question discussed, and called for others to fire away at it.

Mr. Richards did not think Yankee passengers would submit to the side door contrivance. It would be like going back to antiquity. Our passengers must have free access through the cars and water-closets, and other conveniences must be provided for them.

Mr. Coleman contended that as our suburban traffic increases to come near the proportions of what it is abroad, our railroad companies will be compelled to make special provision for handling the rush of passengers quickly. He described the undignified crowding and jamming that prevails on the elevated railroads, in order that passengers may get in and out of the cars with the limited door convenience. The present system of getting on to cars from the ground by means of steps he called the biggest nuisance ever connected with a railroad.

The President believed in the American system of suburban traffic. He thought the kind of cars used by the Boston & Albany Railroad, about 45 feet long, were the right thing for suburban travel. It was the duty of railroad companies to educate passengers up to understand the importance of hurrying quickly out of the cars, so that the least delay possible would be made at stopping places.

Mr. Lauder had another subject to put before the members. During the last ten days a notice has been issued by the Boston & Albany Railroad with reference to

FREIGHT CARS DRAWING FROM THE CENTER PIN.

After the 15th of May the Boston & Albany will refuse to take cars drawing by the center-pin. Mr. Lauder had advised the general manager of the Old Colony Railroad to do likewise, for he considered the move to be in the right direction. Cars drawn in this way are a nuisance and cause endless trouble. He believed the movement would cause some inconvenience for a short time, but the change was absolutely necessary.

The President mentioned that for over three years they had refused to accept cars drawn from the center-pin, unless they were consigned to a point on their road.

Mr. Adams explained that his road had been driven to take the present position in regard to cars drawn from the center-pin. That plan of car construction is an old fogy idea. There have been no cars built in that way around here for fifteen or twenty years. With the heavy loads now carried we can not afford to put these cars in our trains.

The President called for opinions about

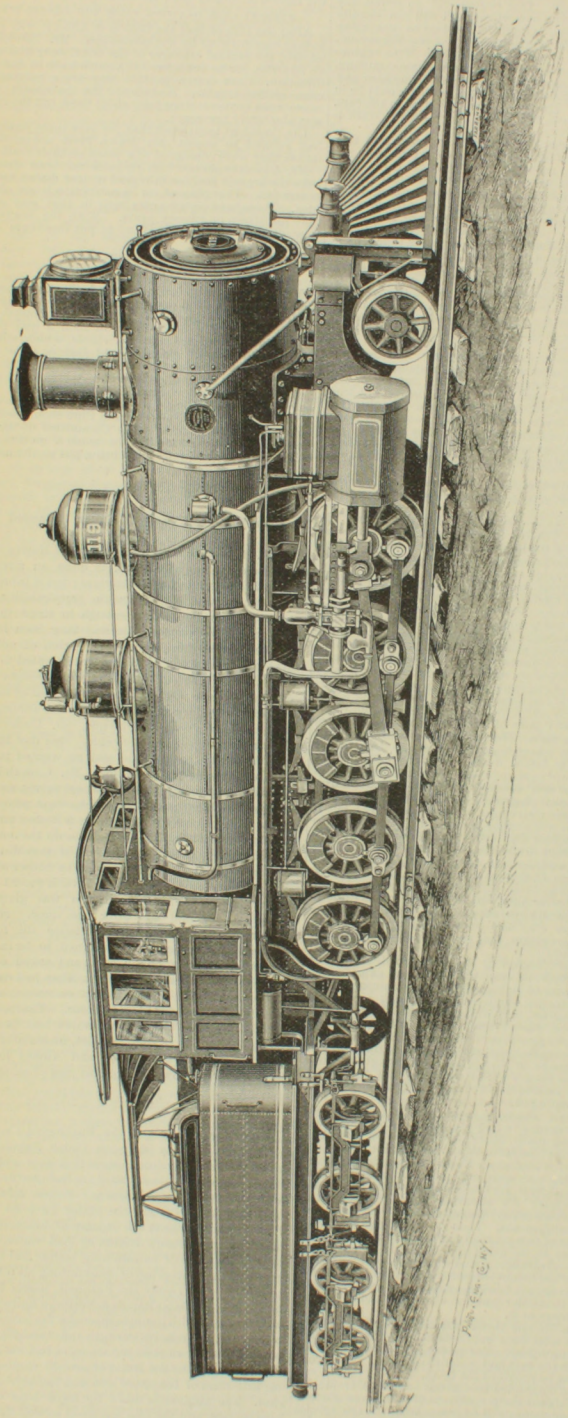
THE STANDARD CAR TRUCK.

Mr. Lauder emphatically indorsed the truck and said the design was a good one in many ways. It dispenses with as much wood as possible, it is made of metal, which means durability, and it is made in such a way that the brakes can be hung between the wheels, which will adapt it for power brakes. Another good feature about it was that it admits either of the swing beam or rigid center. Which of these styles of construction is best, is yet an open question, but he believed in permitting different men to have means of selecting what suited them best. He thought it was right that the New England Club should send their indorsement of the truck to the Committee of the Master Car-Builders' Association, and he made a motion to that effect, which was agreed to on being put to the meeting.

How Mr. Underhill Came to Favor Balanced Valves.

Mr. A. B. Underhill, Superintendent of Motive Power of the Boston & Albany Railroad, is quite an advocate of balanced slide valves for locomotives; but it is only of late years that he came to recognize the practicability of making a balanced valve durable enough to stand the rough test of locomotive service. He had long been impressed with the evils resulting from the friction of unbalanced valves, and tried many of the devices invented to remedy the trouble. Numerous inventions were brought out that seemed to promise well, but the crucial test of hard work invariably proved too much for them, and although favorable to balanced valves in principle, Mr. Underhill came to look upon them as impracticable. One day Mr. George Richardson came to him and said he wanted to put on a balanced valve he had invented. Mr. Underhill did not want to hear anything about balanced valves, and insisted that they were no good. Mr. Richardson proved as persistent in his desire to put one on a Boston and Albany Railroad locomotive. He offered to do the entire work himself, and to take the valves off if they did not give satisfaction; and in no case would he bother any one by talking about the valves whatever their record might be. Under these conditions, permission was given to put the valves on, and the work was done. Mr. Underhill forgot all about the circumstance till four years afterward, when the engine happened to be in the shop for repairs, and the foreman came and asked him if any thing should be done to the valves. They had run all that time without being touched, and on examination they were found to be still in good order. That set of valves ran nine years. The balanced valve had proved itself worthy of adoption in such a quiet, undeniable way, that others were put on the Boston and Albany locomotives and the device is now a recognized part of all the engines.

DURING the present year the Burlington, Cedar Rapids & Northern Railway shops, at Cedar Rapids, Ia., have turned out seventeen locomotives that have undergone extensive repairs. Of these, two have had new fire boxes and eleven of them new side sheets. People using the soft water common in the Eastern States have no conception of the great increase in the expense of locomotive repairs caused, in the Western States, by bad water. On some roads the expense of maintaining boilers and fire boxes is greater than the expense of maintaining all other parts of the machinery. Lately Mr. Bushnell, Master Mechanic of the Burlington, Cedar Rapids & Northern Railway, has been experimenting with iron side sheets for fire boxes, and trying to find out its relative strength and durability when subjected to the deteriorating influences of bad water compared with steel. In the fire boxes of several engines, he put in one side sheet of Tennessee iron and one side sheet of Otis steel. The engines so fitted up have done considerable hard service, and the iron has stood so well that the intention now is to put in a whole fire box of that material. With the steel fire boxes, so far, there has been much trouble experienced with cracking from the stay-bolts. The cracks have seldom extended far, but they soon become so numerous that the leakage would be serious.



THE LOCOMOTIVE "DECAPOD" FROM THE BALDWIN LOCOMOTIVE WORKS.

Decapod Locomotive.

The accompanying engraving gives a perspective view of a very large locomotive, recently built at the Baldwin Locomotive Works, Philadelphia, for the Dom Pedro II. Railroad of Brazil. The builders have called this the "Decapod" type of locomotive, after the ten-footed order of crustacean, quite an appropriate name for a ten-wheel connected locomotive. This engine is for a road with a gauge of 5 feet 3 inches, which gives an opportunity for better proportions of a large locomotive than the standard gauge admits of. This is the largest locomotive ever built by the Baldwin Works, and is the second largest in the world, being slightly lighter than the "El Gobernador," built by Mr. A. J. Stevens, general master mechanic of the Central Pacific Railroad, at the company's shops, Sacramento, Cal., and illustrated in the NATIONAL CAR-BUILDER of July, 1883. The principal dimensions of the engine are:

Actual weight, in working order, exclusive of tender	144,000 pounds.
Actual weight on driving-wheels	128,000 pounds.
Estimated weight of tender, including fuel and water	80,000 pounds.
Estimated weight of locomotive and tender, in working order	224,000 pounds.
Cylinders	22 × 26 inches.
Driving-wheels, five pairs coupled	45 inches diameter.
Total wheel-base	24 feet 4 inches.
Driving wheel-base	17 feet 0 inches.
Rigid wheel-base	12 feet 8 inches.
Boiler of iron, ⅝" thick	64 inches diameter.
Height of center line of boiler above rail	7 feet.
Fire-box	10' 1" long by 39½" wide inside.
Tubes	268 in number, 2" diameter, 12' 9½" long.
Heating surface of fire-box	160 square feet.
Heating surface of flues	1,783 square feet.
Total heating surface	1,943 square feet.
Tank capacity	3,500 gallons.

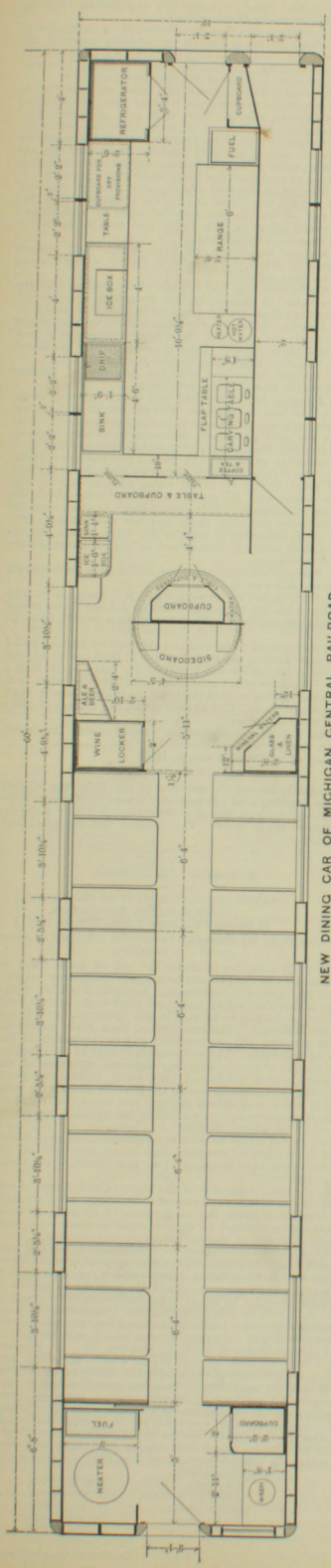
The boiler is straight with extended front end, and is the largest ever built for a locomotive. The fire box is of copper, and gives an unusually large heating surface. A brick arch supported by water tubes runs diagonally back about five feet, reaching from below the lower row of flues to a point in the fire box within twelve inches of the crown sheet. Water is supplied by two full-stroke pumps connected with the cross-heads and by two No. 9 Korting injectors.

The leading part of the engine is carried by a pony swing truck, which is equalized with the first pair of drivers. The second and third pairs of driving wheels are without flanges. To reduce the friction of passing curves, the rear driving wheels are allowed additional play. The rigid wheel base is therefore practically only the distance between centers of the first and fourth driving wheels, viz., 12 feet 8 inches. The Laird type of cross-head made of cast steel is used, and the guides are huge bars of cast-iron The great size of the various parts may be judged from the piston rod, which is 4 inches diameter, and the main crank-pin 6 inches diameter. Strap ends are used for holding the brasses of the main rods, but the side rods have solid ends with bronze bushings, held in position by doweled collars. An automatic air brake controls the engine, shoes being applied between two pairs of drivers at two points, so that eight of the drivers are made available for braking, and the brake is applied to all the four pairs of tender wheels. A canopy is placed over the front part of the tender to protect the fireman from the sun, a plan that would be found an advantage on many locomotives in this country.

The valve gear is of the ordinary shifting link type, and the valves are balanced. The reverse gear is a combination of screw and lever so arranged that either may be used. All the latest improvements that contribute to the convenient and economical operation of the locomotive are provided for this engine. The tractive force for each pound of average pressure in cylinders, is 279.6 pounds. This it is estimated will enable the engine to pull a train of 500 tons up a straight grade of 105.6 feet to the mile.

SINCE railroads began to be opened in Mexico considerable suffering has been inflicted upon Americans who went there as trainmen, through the readiness of Mexican officials to regard unavoidable accidents as crimes. A recent dispatch mentions that a sleeping Mexican was run over by a train on the International Railroad, and that the conductor, engineer, station agent and other employés were arrested and thrown into prison. Mr. Lauder, Superintendent of Rolling Stock of the Old Colony Railroad, who was in Mexico for some time, relates the particulars of a case where justice was attempted and injustice perpetrated in even a more promiscuous way than in the case mentioned. A Mexican got full of rum, and, as usual in such circumstances, went for a nap on a part of the track where a train was close upon him before the engineer could perceive that a man was there, and the Mexican was killed. Before the officers of justice heard of the accident the train was gone, and they could not catch the trainmen. But they were equal to the emergency. They waited till the next train came along, stopped it, and arrested all the trainmen and cast them into prison, where some of them lay a long time offering sacrifice to Mexican justice.

ONE of the most troublesome actions performed by the rebels in the recent disturbances on the Isthmus of Panama was the burning of 150 freight cars belonging to the railroad. This destruction of rolling stock caused a block in moving freight, and much inconvenience will be experienced until the cars can be replaced.



NEW DINING CAR OF MICHIGAN CENTRAL RAILROAD.

Michigan Central Dining Cars.

The illustration is a floor plan of the dining cars of the Michigan Central Railroad. An illustrated description of the interior finish of these cars appeared in the CAR-BUILDER for September, 1884. In November last one of the dining cars belonging to the road was destroyed by fire, and another was begun in March to take its place. Experience had suggested some improvements, which are embodied in the new car, and are shown in the plan. A reduction of the number of tables has been made, two sections having been cut off. It was claimed by those in charge, that they could handle a car with eight tables more economically, and feed more people in the same time, than with ten, there being a less number of waiters in the way to hinder each other.

It was found that with ten tables the passengers were better served than with twelve, and that the enlargement of the kitchen was more important than the size of the dining-room. The further reduction of the number to eight will apparently be another step in the right direction. The dining-room takes up but 25 feet 4 inches in the 60-foot car, the remaining space being devoted to the kitchen, pantry and lockers. The arrangement of the pantry and lockers has been slightly changed in the new car, and more space given for the waiters. The sideboard table has been made round, which makes the passage to and from the kitchen much easier than with a rectangular table, or one with corners. There are double slides, one to the sink and the other to the carving table. The sideboard is placed so that those at the tables do not see into the kitchen, and only one of those at the last table, on one side, can even see the glassware and silver sink. Both waiters and passengers enter the dining-room in the same direction.

The gangway in the pantry is 2 feet 6 inches, and 2 feet 2 inches in the dining-room. The kitchen is unusually roomy, having 2 feet 8 inches in the clear in front of the range, and 4 feet at the carving table with the 6-inch flap table up. The general arrangement of the kitchen is very good, and apparently leaves very little room for improvement.

Communications.

Steel Brake Beams.

To the Editor of the National Car-Builder:

In the report of the meeting of the Western Railway Club given in the May CAR-BUILDER, an objection is raised to the iron brake beam proposed for the new standard car truck. Mr. Snow did not see the utility of an iron brake beam, when you can slide the wheels with a wooden one every time. As the prevailing tendency is to crowd wood out of car trucks, I think the committee acted properly in deciding that the wooden brake beam must go, but the trussed iron beam they propose will be an expensive substitute. Why not use a material that would admit of a plain flat bar? On several Eastern railroads a plain steel beam has been in use for years on tender brakes, and has given the very best satisfaction. A beam of that form is easily made, the attachments are readily fitted on to stay, and it does not get out of shape easily from accident. The Boston & Albany Railroad make their tender brake beams from old tires, and they are 4 × 1 inch and need no truss. That makes a neat, light beam, and some of them have been in use ten and twelve years without any repair, and the first case of these beams breaking has yet to be reported. It seems to me the best policy to combine strength with lightness in the permanent changes to be made in car construction; and the right direction to look for these important qualities combined is in steel.

The Marden steel brake beam is also giving great satisfaction on the roads where it is in use. It is a beam with a T-rail section, and the material is put in good shape for combining strength and lightness. The antipathy to patronize a patented device may keep the Association from adopting the Marden brake beam, but something in that style is what is wanted. EASTERN CAR MAN.

Standard Screw-Threads.

To the Editor of the National Car-Builder:

It is a hard matter to understand just what your correspondent "B." is driving at in his letter on "Standard Screw-Threads," published in the NATIONAL CAR-BUILDER of May. The letter is a curious mixture of fault-finding and commendation, without giving a reason for either. It is not a hard matter to find fault with the United States standard screw-thread system, but the fault-finder never proposes anything more perfect that might have been substituted. But the important fact in regard to this matter is, that a fairly good system has been adopted, and is meeting with extending application. The system is good enough for ordinary mechanical purposes, and the duty of those interested in seeing work cheaply and accurately done, is to throw their whole influence in the scale in favor of using standard screws where they can be applied to advantage. What is wanted is a little more zeal for standards among the men in charge of building and repairing rolling stock. The fact that a quarter-inch plate bolt with usual size of washer begins to pull through Georgia pine with little more than 400 pounds strain, is a very weak reflection against standards, since any mechanic with ordinary gumption would know to use a large enough washer.

The greatest objection that I can see to our system of standard screw-threads, is the popular phraseology regarding them. They are loosely spoken of as the U. S. Standard, the Franklin Institute Standard, and the Sellers Standard, which makes many men, not very well posted, think each of these terms means a system with something different from the other. The various railroad papers are greatly to blame for this confusion, since they persist in using any term that suits the taste or convenience of the writer. All our technical associations that discuss mechanical matters also help to make confusion worse confounded, by speaking of the standard screw-thread system by all the names referred to, a practice peculiarly inexcusable in associations formed to promote science, which means accuracy every time. During the short time that standard threads have come into popular use, the arrangement has brought untold benefit to railroad companies, and the advantages will increase vastly as standard sizes become universal. The benefits are so obvious as to require no argument in their favor. That the standards may be shorn of useless obstacles to their comprehension, I suggest that you and your contemporaries give our system its right name, and on every occasion speak only of the United States standard screw-threads. A. MACLEAY.

Strength of Side Rods.

To the Editors of the National Car-Builder:

A correspondent in your May number signing himself "Draughtsman" calls attention to my remarks on the stresses in locomotive piston rods at the meeting of the Western Railway Club, and says I am laboring under a mistake, and my remarks may be apt to lead others into error. I repeat my statement that "a locomotive piston-rod is subjected to alternate tensile and compression stresses at each revolution of the driver, and the factor of safety for such conditions should be twice that taken for a rod on which there is a constant stress in one direction only."

For my authorities I refer to Weyrauch (Structures of Iron and Steel); Marks (The Relative Proportions of the Steam Engine, page 31); Dubois (Strains in Framed Structures, page 283); Unwin (Elements of Machine Design, page 26). WILLIAM FORSYTH.

Large Wheels and Small Axles.

To the Editor of the National Car-Builder:

In your paper for May, a short note appears intimating that on some roads trouble has been experienced with large wheels on the passenger cars getting loose on the axles. Very little has been said on this subject, but the trouble has been very great indeed, and it is of a particularly serious nature. More than one train has gone into the ditch through the large wheels getting loose on axles that were never intended for a wheel more than 33 inches diameter. A remedy tried in numerous cases of forcing the wheel on with a tension of forty or fifty tons instead of twenty-five tons, has failed badly. There seems to be a determination to keep to the M. C. B. standard axle at any cost, but in this case the cost is proving a little too high. A change is demanded. If 42-inch wheels are to be made a permanent feature of railroad passenger equipment, and there is no reason why they should, they ought to be put on an axle with body enough to hold the wheel secure. It may sound like treason to Master Car-Builder interests, the proposal to depart from their treasured standard axle, but either this must be done or the large wheel must be abandoned if trains are going to be operated safely. I do not know a subject connected with car-building that could better occupy the attention of the Master Car-Builders at their next convention, for considerations of safety to travel should be paramount in their counsels. M. M.

IN 1881, the management of the Reading Railroad issued an order to the mechanical department of that road that they should put on for trial any automatic car coupler any inventor might desire to have tested in train service. The result of this order was an enormous immigration of car-coupler inventors to the Reading shops, all supplied with their pet devices. The crucial test of trial in ordinary train work soon showed that most of the devices were worthless, but a few good ones went through the ordeal successfully, and are now candidates for adoption. The mechanical officers of the Reading road learned a great deal about automatic car couplers during the four years that the practice of testing couplers was followed. Some couplers that appeared perfect in the models and drawings proved utterly worthless in service, and others that had an impracticable look in the models did surprisingly well on real cars. At one time there was lying in the Reading shop yards between four and five tons of castings of impracticable car couplers waiting to be claimed by their owners. The result of the training the mechanical department of the Reading Railroad received at this time was, to make them very cautious about venturing an opinion about the merits of a car coupler till they see it tried in actual service.

Fig. 1

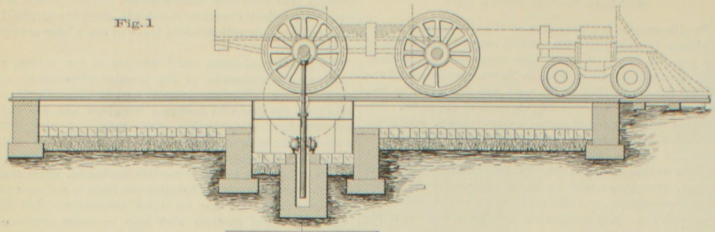
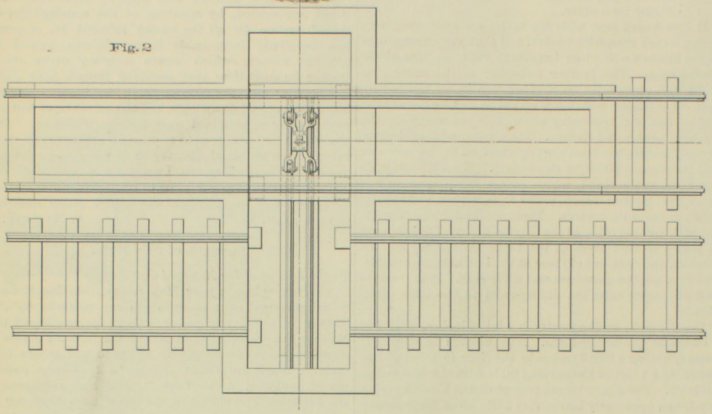


Fig. 2



Locomotive Wheel Remover and Replacer.

The appliance shown in Figs. 1 and 2 on this page, illustrates a very simple, cheap and expeditious means of removing and replacing locomotive wheels without jacking up the engine, invented by Mr. J. H. Vreeland, Master Mechanic of the New York, Lake Erie & Western Railroad, at Jersey City. A pit made deep enough to lower any pair of wheels clear of the engine's frame, is made to cross the stall pit at right angles. In the bottom of this pit are placed two rails that carry the hydraulic jack shown in Fig. 1. The rails of the stall pit span the cross pit by means of a short rail fastened to a movable stringer. Pits of this description are in every-day use in the shops at Jersey City, where Mr. Vreeland has charge. When an engine is put in a pit to have the wheels removed, she is placed with one pair on the center of the cross pit. The hydraulic jack is then run under the center of the axle and raised till it takes the weight of the wheels. The rails that span the pit are then removed, the jack is lowered till the wheels are low enough to clear all obstructions, the hydraulic jack is then pushed along on its small track till the wheels are clear of the engine, or beneath an unobstructed track, when they are raised and taken away. The rails are replaced under the locomotive. She is pinched along till another pair of wheels are over the cross pit, and the operation already described is repeated. A small truck is generally put under the locomotive to carry the weight. The cross pit is made wide enough to take in the whole of an engine truck. By the use of this apparatus a small gang of men have removed the wheels of a consolidation engine in forty minutes. The wheels are replaced by reversing the operation. Mr. Vreeland estimates that the apparatus and pit for one stall can be put in for $200. A handy laborer belonging to the shop built up the pits he has in use. He reckons they paid the expense of construction within one month by saving of time and extra labor. The arrangement is patented by Mr. Vreeland.

Western Railway Club Meeting.

DISCUSSION ON BALANCED VALVES.

At the May meeting of the above club, President Verbryck intimated that Mr. Cooke had proposed the subject of "Balanced Valves," and it was right that he should open the discussion.

Mr. Cooke said he did not know much about balanced valves, his idea in proposing the subject for discussion being that he might learn more about it from others. He thought the subject deserving more attention than had been given to it in view of the possible saving in repairs of machinery and in fuel. One locomotive on his road had been running with Richardson balanced valves for two years with good results. He was anxious to put on more of the valves, but wanted to hear about the experience of others with it.

Mr. Forsyth: What does it cost?

Mr. Cooke: We paid ninety dollars for a set of valves. If we could get hold of something that was not patented, which we could get as good results from, we would make a great saving for repairs and fuel. The valve gear is the end to commence at. If we can get the pressure off the top of the valve, so that a man can work it with a crippled hand, the engine must draw three or four more cars, with the same expense for fuel and repairs. That is why I think the matter deserving of more attention than some have thought necessary. If we can get an engine to pull three or four more cars loaded with about forty tons, we can soon pay for the valves with the price we get for the freight. I would like to hear from members who have used other valves of different kinds. If they know of some valve that is not patented which we could put on at a less figure, I would like to learn about it.

Mr. Richardson, patentee of the well-known balanced valve, was called on to make some remarks. He was gratified to hear that the balanced valve made Mr. Cooke's engine do so much extra work. He was not sure that so good a result had been obtained elsewhere, but he was sure that on any road the valve would pay for itself in a very short time. The expense attached to the manufacturing of a balance valve and making it as it should be made, of the best material, is underestimated. Mr. Cooke neglected to state that he received with the balance valves a set of relief valves, that are made extra heavy and cost nearly ten dollars net.

Mr. Cooke: In saying that the engine with the balance valve could draw two or three cars more, I merely judged from the easy way they work. I came to the conclusion when so much friction was taken off, it must result in that engine doing more work.

Mr. Richardson said one of the first of these valves was put on an engine that pulled a freight train over a grade fourteen miles long, fifty feet to the mile. Before the valves were put on, eighteen cars were considered a load, and afterward the engine took nineteen cars. He believed the engine does not slip so badly with balanced as with unbalanced valves. There is a reason for that in the fact that you maintain the motion of the valve uniform better with a balanced than with an unbalanced valve. When the port begins to open with an unbalanced valve, the down pressure becomes relieved to some extent by the pressure entering under the valve, and it will then have a tendency to jump open, which will tend to make the engine slip. The master mechanic of the Troy & Boston Railroad made the assertion that their engines wore their tires much less after the balance valves were put in than before. In reply to a question from Mr. Cooke, Mr. Richardson said he did not consider the patent on the relief valve was worth much. The balanced valve is now on nearly 3,000 locomotives, and the first complaint has yet to be made concerning it, and it has run as high as 150,000 miles without any repairs.

Mr. Stevens: How much of a load is relieved from the valve by balancing?

Mr. Richardson: That question has been asked by a great many locomotive men. On locomotives having 16 or 17-inch ports, the number of square inches inside of the packing in my valve would be ninety. Now, theoretically speaking, allowing 100 pounds to the square inch in the steam chest would put 9,000 pounds on the valve. With this pressure the amount of power expended in moving the valve must be considerable. I made a dynamometer valve rod last year and put it on one of the Boston & Albany engines, and made some experiments. They are not complete yet. With the balance valve it required about 325 pounds to move under its worst condition with the throttle wide open; with the unbalanced valve 2,100 pounds were required under similar conditions.

Mr. Forsyth mentioned the details of several balanced valves that are in use on different railroads, and asked Mr. Richardson to explain just what points are covered by his patents.

Mr. Richardson said the peculiarity of his valve consists simply in absolutely breaking the joints of the packing in the line of travel. The packing is made in sections, or separate bars, so arranged that each bar in its travel does not cross the line of travel of any other bar, thus giving each bar an independent place for wear on the balance plate.

Mr. Forsyth: Have you made any experiments showing the actual economy of this valve?

Mr. Richardson said that Mr. Underhill, of the Boston & Albany Railroad, made a series of carefully recorded experiments some years ago with engines with balanced and unbalanced valves; and that he found a saving of about eleven per cent. in favor of the balance-valve.

Mr. Stevens gave particulars of a series of experiments he had conducted to prove the relative value of balanced and unbalanced valves. They took a 17 × 24 inch passenger engine and ran her 2,000 miles with the plain slide valve, weighing coal, measuring water, and keeping an accurate account of the cars hauled. Then they did the same thing after putting in balance-valves, and found that the saving of coal with the latter was about 5 per cent.

Mr. Richardson directed attention to the fact that one month is not a fair period of trial for a balance valve, for at the end of five or six months' wear an unbalanced valve would begin to leak badly and the balance-valve would then have the advantage.

Mr. Stevens' experience goes to show that their engines with balance valves run 75 per cent. longer without facing than the plain valve.

Mr. Cooke said they had run one of the engines with the balance valve 18 months before they took a cover up. Usually the valves would have to be faced in seven or eight months. When they took the covers up they found the seat only hollowed out about $\frac{1}{64}$ inch instead of $\frac{1}{16}$ inch with the plain valve. That showed greatly decreased wear, therefore there must be less friction.

Mr. Forsyth remarked that the decrease of friction would enable them to save lubricants.

Mr. Johnson said they had got using balance valves within the last 18 months. For the length of time the engines have run the results have been satisfactory. The valves are used principally on heavy passenger engines. Prior to using the balance valve their engines, which used high pressure of steam, ran only a few months without facing the valves, but now they run 250 miles a day and make from 50,000 to 75,000 miles without having the covers taken off. He agreed with Mr. Cooke about the engines with balance valves being easily handled; and he inferred from this that there was less wear on the valve gear. This reduction of wear in the valve motion he regarded as of as much consequence as the reduction of wear on the valves alone.

Mr. Stevens asked if any one could give information about the Allen valve.

Mr. Forsyth had taken part with Mr. Boon in experimenting with the Allen valve, but he did not think it was properly proportioned. They found little benefit from its use.

Mr. Richardson: The best are obtained by making broad ports and bridges, the united width of both ports and both bridges to exceed the full travel of the valve by at least $\frac{1}{4}$ inch. Another point to be observed about the valve is to make the casting so that the inner and outer shells shall expand uniformly. Unless they do so, the valve will cause rapid wear of the seat.

Some desultory conversation ensued about the result of Mr. Forsyth's experiments with the Allen valve, but nothing of importance was elicited.

ELECTION OF OFFICERS.

Mr. Cooke moved the election of the following officers for the ensuing year: President, Charles F. Pierce; Vice-President, George Stevens; Secretary, William Forsyth; Treasurer, W. B. Snow. The motion was seconded and carried.

Automatic Car-Couplers.

OFFICE OF THE SECRETARY OF THE MASTER CAR-BUILDERS' ASSOCIATION,
71 BROADWAY, NEW YORK, May 15, 1885.

Circular from the Executive Committee relating to Automatic Car Couplers.

SIR: In a number of States the use of some form of Automatic Car Coupler has been made obligatory on railroads by legislative enactment. In most, if not all, of the laws of this kind which have been passed, the special form or kind of coupler to be used is not specified, but it is left to the Railroad Commissioners of each State to decide what couplers will comply with the requirements of the law of that State. This will naturally lead to the adoption of a variety of couplers on the different railroads of the country, and it is believed that while legislation of this kind may *temporarily* satisfy the popular clamor for some action which will reduce the risk and danger of coupling cars, it seems probable that unless the railroad companies agree to use either one form of self-coupler, or only such forms as can safely be used in connection with each other, that the danger to the men who couple cars will be increased instead of diminished by this action of the State Legislatures.

At the last convention of the Master Car-Builders' Association a resolution was passed instructing the Executive Committee to solicit the co-operation of all railroad companies in an attempt to decide experimentally the comparative merits of various automatic car couplers.

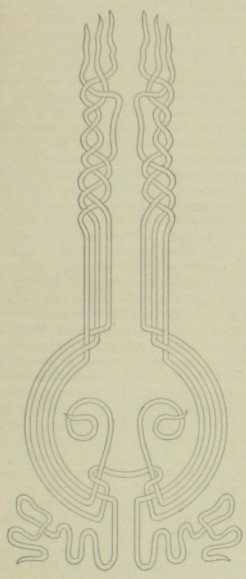
After due consideration, the Committee do not feel sure that it would be possible to determine by experiment which is the best form or forms of self-couplers, or if it was so determined, whether it would be possible to secure its general adoption by the railroad companies of the country. For that, and for other reasons, the Committee have determined to make "the Coupler question" the subject for consideration at a special meeting, which will be held in the Hygeia Hotel, at Fortress Monroe, Va., on Wednesday, June 10, 1885, at 3 P. M., at which place the next annual convention of the Master Car-Builders' Association will be held, beginning on Tuesday, June 9, at 10 A. M., and to invite all railroad managers, general superintendents and railroad commissioners to attend and take part in that meeting, or else send a suitable person to represent them.

You are requested to advise the Secretary whether you will be present at, or will send a representative to that meeting. A suitable postal card is inclosed for your reply.

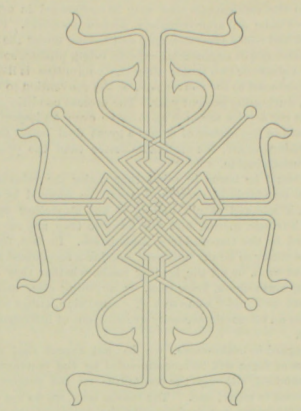
Very respectfully,

LEANDER GAREY, JOHN W. CLOUD, JOHN KIRBY, L. PACKARD, F. D. ADAMS, WM. MCWOOD, B. K. VERBRYCK, T. A. RISSELL, JOHN S. LENTZ, JOSEPH TOWNSEND, E. B. WALL,
Executive Committee.

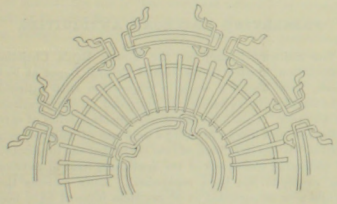
CELTIC ORNAMENT IN CAR CONSTRUCTION.



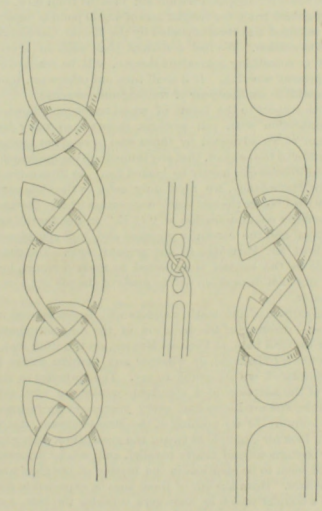
End of Double Border. Also used for an End Panel.



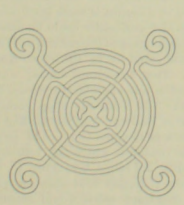
For a Whole Panel.



Center for Large Panel, or for Lamp Center.



Borders and Knots for Sides of Panels, etc.



Small Panel Center or Rosette.

THE above designs illustrate some of the features of Celtic ornamentation which have recently been used in car decoration. The patterns are in all cases treated in a very simple manner. When used for ornamenting natural wood surfaces in color, the ribbons are painted in a flat tint; carmine, olive green, gold, etc., being used according to the requirements of the case. A black line is used to edge the color and separate it from the groundwork. This line also serves to indicate the interlacings.

These patterns are very beautiful on gold grounds. As in lettering, a line of dark color is used to separate the ground from the pattern. When done in very light tints, nearly approaching white, upon dark grounds, the effect is very brilliant. For this kind of work the less complicated and more open patterns appear to be most satisfactory. The reason for this is found in the overpowering effect of white, or colors which in tint approach it. There are a great variety of other patterns which are used for covering panels or larger surfaces in which these lizard-like animals are frequently introduced. These patterns are quite as applicable to carved work as to painting, and in ancient times they were frequently cut in both wood and stone. Little labor is required to carve patterns of this description in relief. The more complex the pattern, the less the work. For example, the middle portion of the center-piece which contains the basket work could be left in relief much easier than it could be sunk.

Most of the open patterns are easily incised, and when finished in this way look very well. Celtic ornamentation is especially adapted to metal work. Basket racks, gratings for ventilators, open panels about heaters, and a thousand other similar places could be filled most appropriately with these woven and twisted patterns. The styles commonly used for such gratings are unsuitable for the purpose, because they do not properly fill a panel without introducing supplementary figures for the purpose of filling voids in the original designs, and in nearly every instance, filling the void destroys the harmony and mars the beauty. The spiral ribbons, with their interlacing corners and centers, will fill a rectangular space while the vacancies will be nearly uniform over the whole area. With the suggestions, in connection with the illustrations, it will not be difficult for the designer to work out ornaments for any position.

Variations and modifications may be suggested, such as the substitution of ropes for ribbons and knots at the points of interlacing. Beauty of color, beauty of line and harmonious effects may all be combined in this novel style of decoration. At the same time, the artist has abundant materials at his disposal for any work he may be called upon to execute.

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EDITORIAL ANNOUNCEMENTS.

Addresses.—*Business letters should be addressed, and drafts and money orders made payable, to* THE NATIONAL CAR-BUILDER. *Communications for the attention of the Editor should be addressed* EDITOR NATIONAL CAR-BUILDER.

Advertisements.—*Nothing will be inserted in this journal for pay,* EXCEPT IN THE ADVERTISING COLUMNS. *The editorial department will contain our own views and opinions; and the rest of the reading matter, aside from advertisements, will be such as we consider of interest to our readers.*

Contributions.—*Articles relating to railway rolling stock, construction and management, and kindred topics, by those who are practically acquainted with these subjects, are especially desired. Also early notices of changes in railroad officers, organizations and names of companies.*

Special Notice.—*As the* CAR-BUILDER *is printed and ready for mailing on the last day of the month, advertisements, correspondence, etc., intended for insertion, must be received not later than the 25th day of each month.*

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THE MASTER MECHANICS' CONVENTION.

The approaching convention of the American Railway Master Mechanics' Association bids fair to be one of the most successful meetings ever held by the organization. The association is in a flourishing and progressive condition. Past meetings indicate that the interest in the work carried on by the organization is extending, that the individual members are taking a deeper interest in the subjects under investigation than they have formerly exhibited. This is a healthy sign. If developed, it will give the association a wider influence, it will redound to the benefit of railroad companies, and the members individually cannot fail to reap substantial advantages.

The coming meeting will be held at a point which will attract many master mechanics who have not hitherto attended the conventions. During the last ten years, railroads in the Southern States have made remarkable progress, and it may be expected that many of the mechanical representatives of these roads will be present at Washington to tell what they are doing, and to obtain information from other master mechanics regarding subjects of mutual interest. There is a belief prevailing among some railroad managers, that the information brought out in the reports and discussions at the Master Mechanics' Conventions embodies all the facts about mechanical matters that a master mechanic learns by attending the meetings. This is a great mistake. There is good reason to believe that the most valuable information gained by master mechanics at the annual conventions, is obtained in the course of private conversation, where one man explains to another his methods of doing work. Many of the ablest mechanics among the members are not ready to stand up in meeting and make a speech explaining their methods, yet the same men will readily impart valuable information in the

course of a social conversation. We will mention a single case in the way of illustration. A member of the Master Mechanics' Association had charge of the machinery of a Southern railroad where they were burning wood. The management of the road decided that they would begin burning coal, and gave the master mechanic orders to make the necessary changes in the locomotives. He was a first-class mechanic and engineer, but had no experience with coal-burning locomotives, and was at a loss to know just exactly the changes to make. The Master Mechanics' Convention was near at hand, and it was decided that nothing should be done till the master mechanic returned from attending the meeting. While there he talked round among the master mechanics who had changed engines from wood-burning to coal-burning and found out full particulars as to what they did. Not the least valuable part of the information obtained, were facts of failures with certain methods. He went back and set to work changing the locomotives to adapt them for coal-burning, and in no case was any mistake made. This master mechanic and his general manager believe to-day, that attending that convention saved their road thousands of dollars which might otherwise have been spent rectifying mistakes committed in changing the engines; yet the published proceedings made no mention of any information of that kind having been imparted. To-day there are few master mechanics who need information about changing wood-burning engines; but there are living questions of almost as much consequence constantly coming to the front, and it is good for those interested to have a yearly opportunity of talking the matters over with others who may happen to be better informed. Valuable facts may readily be obtained during conversation that no amount of letter-writing would bring forth; and most master mechanics feel a delicacy about writing letters asking for mechanical information. During a conversation started to elicit facts, there is generally some information given for what is received, so there is no great burden of obligation on either side.

THE MASTER CAR-BUILDERS' ASSOCIATION.

The annual meeting which convenes at Fortress Monroe on the 9th of this month is likely to attract the attention of railroad men to a greater extent than any previous meeting has done since the association was organized. The reasons for this are very apparent. Up to the time of its reorganization in 1882 it had done much useful work, as much, perhaps, as could reasonably be expected in the absence of any effective co-operation, or of recognition, even, on the part of the railway companies whose interests the association was striving to promote. There was a lack of money, of time, and even of ability to conduct the necessary investigations; the tenacity of individual opinion prevented any general agreement in respect to many proposed reforms, and there was an utter absence of power to compel the roads to adopt and carry into effect any recommendations that might be made.

About five years ago, it began to be manifest that the association was running in a groove that was becoming very much worn, and that something must be done to "increase its efficiency." The need of concurrent action on the part of the roads, in order to bring about greater uniformity in freight car construction, was getting to be more pressing every year in consequence of a rapidly increasing tonnage, a more extensive interchange of cars, declining rates of freight, and heavier car loads. The Car-Builders' Association seemed to be the natural instrument or medium by which such action could be secured, but it was manifestly unequal to the emergency unless it could be rendered more efficient than it then was. For this purpose it was reorganized and given a representative status with the roads, its membership was increased both in numbers and ability, its treasury replenished, and the roads represented placed under an implied obligation to recognize and adopt its recommendations. The old machine was in fact reconstructed into a new one, and as fully equipped for business as was practicable under the circumstances. A little time must of course be allowed for it to get into good working order, and it has now had two years and a half for that purpose.

The subjects upon which committees are expected to make reports at the approaching convention are all of them of special importance. Three of them are indeed of vital importance, and the committees having them in charge are under positive instructions to report specific recommendations. One of these committees must report a standard truck for freight cars of 40,000 pounds capacity; another a form of brake shoes, brake beams and interchangeable parts; and another a definite mode for the framing and trussing of freight cars. These committees must, in other words, agree upon something that they can recommend for adoption by the convention, or else not obey instructions. The convention will then have to take definite action on the reports, and here will come the trial test of "increased efficiency." The need of early and decisive action in the matter of a standard freight car truck is so urgent, that if no results are reached at this meeting except disagreement and further procrastination, the outlook will not be promising. We are aware that no truck can be devised so ideally perfect as not to be open to suggestions for improvement in some of its details. Considering the numerous elements pertaining to such a structure, the cost, weight, materials, the sizes and interdependence of the various parts, the strains of service, etc., there is no end to the refinements that may be introduced in order to reach even an approximately perfect standard. Prolonged and costly experimenting and testing under the superintendence of engineering experts, might produce something a shade or two better than the committee is likely to recommend to the convention, or the convention to the roads, during the present year. The present conditions of freight car service are such as to make even an imperfect standard in the matter of trucks a great deal better than no standard at all; the attainable better than the practically unattainable.

It should be borne in mind that under the voluntary system standards of construction will be adopted by the roads, if adopted at all, mainly if not altogether upon their intrinsic merits, and not because they are recommended by the Car-Builders' Association. In fact, there are not likely to be any universal standards recognized and used, as such, by all the leading roads, whether they are trucks, brake-shoes, draw-bars, or anything else, unless they are used under some sort of compulsion, either legal or from an economic necessity growing out of interchange traffic.

In regard to brake-shoes, we do not expect that any pattern or form will be recommended by the convention as a standard, although the committee on the subject is instructed to report one. The reason why we do not expect it is because our confidence in the ability of the convention to agree on any particular form of shoe is very slight. The test of "increased efficiency" will come on the question of a standard truck. Efficiency means a practical agreement upon something that can be presented to the roads for adoption within six months from now, as the standard truck for freight cars of 40,000 pounds capacity, indorsed and recommended by the Master Car-Builders' Association. We feel confident that such an agreement, or something equivalent thereto, will be reached at this present meeting. If it shall turn out otherwise, then there will be another year of waiting and suspense.

With respect to the forms of wheel treads and flanges, in connection with rail sections, there are so many discordant views advanced by those who have given special attention to the subject, that any immediate reconcilement or compromise can hardly be looked for. As illustrations of this discordancy, we need only refer to the elaborate paper read before the last year's convention by Mr. Forney, the lengthy communication of "C. E." in the April CAR-BUILDER, and the carefully prepared and well considered article of Mr. Partridge in our present issue. The committee on the subject is expected to make a report, but that any final disposition will be made of the subject is not probable.

The subject of automatic couplers will be considered at a special meeting of the members of the Association and other railroad men, at Fortress Monroe, on the 10th inst., but what is to be done, or whether any definite action is contemplated, we are unable to say. The obstacles in the way of the adoption of a standard coupler are very formidable, and are increasing every year, as every railroad man knows. To say nothing of the Massachusetts experiment, look for example at two of the great trunk lines running contiguous and nearly parallel, and whose interests would seem to be identical in the matter of couplers and draw-bars. How can one of these lines be expected to discard a coupler which its managers consider the best, and adopt another which its rival considers best? And if these two great lines can not agree in making a selection, with only two to select from, what chance is there that other lines can agree to adopt a coupler, even if it were possible for the Car-Builders' Association to agree in recommending one?

AMERICAN LOCOMOTIVES FOR BRITISH COLONIES.

People acquainted with the work done in the Baldwin Locomotive Works, and in other locomotive works throughout the United States, are aware that building locomotives for Australia and other British colonies provides employment to many American mechanics. To those familiar with the low wages paid to the mechanics who perform the work of locomotive building in Great Britain, it has often been a matter of surprise that our builders were able to compete with British locomotive makers for a market where prejudices naturally favored our rivals. The first part of the explanation is, that the American locomotive is better adapted to colonial railways than the typical British locomotive; and the second part is, that owing to our superior methods of manufacture, American builders can turn out locomotives cheaper than their British competitors. A report compiled last year by the United States Consul at Glasgow, Scotland, gave detailed items of the cost of locomotive building in that city, which clearly proved that engines of the same capacity were built considerably cheaper in Philadelphia. This result, so creditable to American enterprise, is due to several causes. The American locomotive is simpler in its parts than the ordinary British locomotive, and more of the skilled work can be done by machinery. In American locomotive shops, labor-saving appliances are better developed than they are abroad, and our admirable system of contract work urges the workmen on to produce first-class work at small cost.

Although American locomotive builders continue to receive orders regularly from the British colonies, our English rivals are by no means willing to admit that the American locomotive is superior to that of British make, even for railways of inferior construction, and very bitter controversies have been several times waged in the technical press by the advocates of the conflicting interests. The subject has recently been revived by a speech delivered at Auckland, New Zealand, by Sir Julius Vogel, who is Colonial Treasurer. This official, the correctness of whose utterances is beyond dispute, stated that they had obtained exceptionally good service from a type of American-made locomotives running on the railways in the colony. From patriotic motives, they concluded it would be better to order locomotives of precisely the same type from British makers and the necessary specifications were sent on. When the locomotives made on this order were nearly ready for shipping, the engineers in charge telegraphed that the bridges on the railroads would have to be strengthened, as the engines were much heavier than the contract called for, the makers asserting that the limit of weight could not be maintained. The government officials telegraphed back refusing to take the locomotives, and at the same time they ordered engines by telegraph from America which fulfilled their requirements and they were promptly forwarded. The English makers of cutlery lost the American market for axes by insisting that wood-choppers should use the European pattern of axe, and that blind action was the means of building up the American axe industry. The English makers of cutlery lost the Australian market for axes because they insisted again that they understood the chopper's needs better than he did himself, but he bought the American ax and our makers hold that trade. The makers of English locomotives are, like their neighbors the ax-makers, a little too wise in their own conceit. While they have been trying to proselytize the colonists and make them abandon the worship of that objectionable false god, the American locomotive, the American locomotive builders have worked quietly along and taken possession of the trade, which will not be easily taken away from them.

PRESERVING RAILROAD ANTIQUITIES.

The Railway Branch of the Young Men's Christian Association, located in the Grand Central Depot at New York, have begun a work in connection with railroads that ought to be systematically pursued on every railroad in America. They have set about collecting relics of early railroads, and intend forming a museum of railroad curiosities. It has only been of late years that the importance of collecting specimens of the appliances used in developing railroads has been recognized. Many articles that would now be regarded as of priceless interest have been lost beyond recovery by the apathy of those who ought to have preserved them, but hundreds of genuine railroad antiquities are still lying round different railroad shops, and they ought to be sacredly preserved from destruction. What is really wanted in America is some institution where railroad antiquities and curiosities could be preserved and exhibited as those belonging to the railways of the British Isles are preserved and cared for in the South Kensington Museum, London. That Americans display warm interest in early railroad relics was abundantly proved by the interest manifested in the Old Curiosity Shop corner of the Chicago Exposition of Railway Appliances, and in the portion of other exhibitions devoted to relics of pioneer railroad operating. The readiness which our railroad officers display in forwarding old relics belonging to their roads to public exhibitions indicates that they are proud to show such articles. The same spirit would readily donate articles of general interest to a national institution established for preserving them. If some of our railroad magnates would come forward and furnish a museum building for the preservation of railroad antiquities they would perform an act of generosity that would be appreciated through many generations. Such a building would be an imperishable monument to its founder.

If it had been preserved, the small "Tom Thumb" locomotive made by Peter Cooper for the Baltimore & Ohio Railroad would now be of universal interest, for its work demonstrated at a time when few people believed locomotive traction to be practicable on any roads, that a locomotive could work, even on a badly curved road like the Baltimore & Ohio. That pioneer is lost, but the immediate progeny fashioned after its form have representatives still left that ought to be placed in safe keeping where they could be seen. The boiler of the first locomotive that turned a wheel on the American continent is still in good order, and though not of American make, is an object of interest to most of our countrymen. Part of Baldwin's first locomotive, the Old Ironsides, is preserved with fond care in the works at Philadelphia; the Pennsylvania Railroad Company have their first locomotive housed comfortably in one of their shops; the first car built with center-bearing trucks by Ross Winans, is preserved by the Baltimore & Ohio Railroad Company, and numerous other railroad relics scarcely less interesting are scattered

throughout the old railroads all over the country. Now is the time to collect these relics and to establish their identity, before the few pioneer railroad men remaining, who can certify to their identity, are called hence. When the history of a relic is left to verbal tradition, it is liable to have more romance than facts told respecting its origin and service. This was illustrated in the first relic received by the Railway Branch of the Young Men's Christian Association at the Grand Central Depot. It was a pair of locomotive driving wheels that had been for many years about the New York Central Railroad shops at West Albany, and were reputed to have belonged to the "De Witt Clinton," the first locomotive that ran on the Mohawk & Hudson Railroad. Investigation brought out the fact that the wheels belonged to the locomotive "Experiment," built at West Point Foundry in 1832. A few years more and the identification of these wheels would have been no longer possible. There are many railroad relics around whose history is mere tradition, but a little labor by the proper men might yet establish authentic facts regarding them. It is to be hoped the movement begun in the Grand Central Depot rooms may be followed all over the country; and that it may eventually lead to combined means of preserving our railroad antiquities.

TESTIMONY IN FAVOR OF THE BRICK ARCH.

Mr. J. N. Lauder, superintendent of rolling stock of the Old Colony Railroad, has lately been engaged in carrying out systematic tests to demonstrate of what practical value a brick arch is in the fire-box of a locomotive. He took two locomotives of precisely the same dimensions and in about the same condition, and put them to run alternately on the same trains. The engines are fine specimens of high-speed locomotives, built by the Taunton Locomotive Works, and they are equipped with all modern improvements for facilitating handling and running. One engine had the Pennsylvania Railroad style of brick arch supported by water tubes, while the other engine had a plain fire-box. They ran opposite each other for two months, and care was taken to see that no extra work was done by either of the engines that would vitiate the value of the performance report. For the month of April the engine with the plain fire-box ran 50.87 miles to the ton of coal; and that with the brick arch made 58.22 miles running to the ton of coal consumed. The record for the preceding month was something similar. The greater part of the running was done on express trains between Boston and Taunton, the average weight of train being 160 tons exclusive of the engine. The run of 36 miles is made in 52 minutes, and the train has to be slowed up at eight or ten points, besides making several know-nothing stops. Under these circumstances, running with a coal consumption of 34.3 pounds of coal to the train-mile, as was done with the engine having the brick arch, was very economical work. Both engines did very good service for their coal consumption, that with the plain fire-box having run with 39.3 pounds of coal to the train mile. These figures indicate that about 14 per cent. of coal saving was effected by using the brick arch. Mr. Lauder was doubtful about the economical value of the brick arch till this test was completed, but he is now having the second engine equipped with an arch, and intends running the engines in the same way, both with arches, to note their relative performance in that condition.

We recently received testimony in favor of the brick arch on another road. The Boston & Lowell Railroad run some very heavy express trains out of Boston, and use locomotives with cylinders 18 × 24 inches and drivers 72 inches diameter for pulling the trains. We rode on one of these engines when it was pulling 14 heavy passenger coaches, among which were several sleeping cars. Starting from Boston, there is a long grade of 35 feet to the mile on which the train has to be got up to a speed of about fifty miles an hour. This requires hard work. The engines had plain fire boxes when they started first on this work, but a few weeks before we witnessed the trip arches were put in. During the severe test of the starting pull, the engine's steam kept close up to the popping point. The fireman said that before the brick arch was put in, he never could get over the hill without losing twenty pounds of steam; but since the engine had the arch he could always keep up a full head of steam with the door a notch open.

THE ACTION OF SPRINGS.

Car springs are usually tested by placing on them the weight they are expected to carry, and then ascertaining how rapidly they will vibrate under such weight. As the load in testing usually consists of disks of iron suspended at the end of a long lever so adjusted as to throw the desired weight upon the spring, the motion is necessarily slow. In some cases it has been estimated that the spring only opens and closes at the rate of one vibration per second. This is undoubtedly true in respect to rythmic vibration produced by gravity. With less than the total load, the speed with which a spring can open and close seems to be almost, though not quite, unlimited. In fact, no ordinary means of measurement is sufficient to record it. Whenever a wheel passes over a low point or depression in the track, the axle is forced, or more properly shot down with a velocity which bears a certain ratio to the reduced resistance which the spring meets at that moment. The reaction which follows is equal, and in the opposite direction. In forcing a wheel down the only resistance encountered is that due to the inertia of the mass below the spring and the friction of the moving parts. That steel springs have a limiting speed of motion is evident from the fact that they transmit jar or tremor perfectly to the car body. Against this they seem to be altogether powerless. The old rubber spring which, from the shortness of its motion or its undue rapidity, appeared to have no effect in neutralizing the irregularities of the track, was a very complete non-conductor of tremor. Car bodies mounted entirely on rubber were sometimes almost as lively as though they were without springs, and yet it was almost impossible to detect the tremor produced by the wheel on the rail.

Common observation is sufficient to determine the time needed for a spring to vibrate under its full load. The more important question is, With what speed does the spring open when it is suddenly relieved from half its load? Stated in another form, the problem is to find how fast the spring will open when a wheel drops into a hollow in the track. The rate of this motion is evidently very different from that with which it moves under a full load.

An altogether different form of spring-testing machine from any that are in common use is obviously needed. It should simulate the character of the shocks to which a spring is practically subjected, and make an autographic record both of the speed and intensity of the shock and the time and amplitude of the vibrations resulting from it. The only difficulty will be the inconvenience of handling the weights, which should be placed directly on the spring without the intervention of levers. The friction of the bearings is considerable, in spite of the knife edges, and the spring does not behave as it would with a load directly applied.

UNITED STATES STANDARD SCREW THREAD.

A correspondent in another column directs attention to the confusion that arises from the habit of writing and speaking of our standard screw threads variously as the United States standard, the Franklin Institute standard and the Sellers standard. There is no doubt whatever that many railroad mechanics think these three names each denote something different, although they all mean one system. The United States system of standard screw threads was devised by William Sellers, of Philadelphia, and was adopted by the Franklin Institute on the recommendation of a committee appointed by that institute to investigate the subject of screw threads. In 1868 the Chief of the Bureau of Steam Engineering of the United States Navy reported in favor of the standard screw threads devised by William Sellers being adopted as standard in the United States Navy, and his recommendations were carried out. Various engineering societies and manufacturing establishments shortly afterward adopted the Sellers system of screw threads, and it became known as the United States standard, to distinguish it from the Whitworth system, used in Europe. The leading points about the system are: that the angle of the thread shall be 60 degrees, that the screw shall have a given number of threads per inch; that the threads must be of certain form and proportions and that the diameter of the screws must conform to the settled sizes. All the particulars about the sizes have been repeatedly published in the CAR-BUILDER, and every engineering hand-book contains them, so there is no reason why every mechanic in the country, and more especially those in charge of work, should not be familiar with all facts about the threads. Familiarity with the dimensions of the United States standard screw threads ought to be an essential requirement on the part of every mechanic who works on iron, and men in charge of such work ought to be ashamed to acknowledge ignorance of a matter of so much importance to mechanical accuracy.

PNEUMATIC MOTOR FOR STREET RAILROADS.

Mr. Robert Hardie, whose system of pneumatic locomotives attracted considerable attention some years ago when he ran trains on the New York Elevated Railroad with his compressed-air engine, has recently got a motor of his design put to running street cars on a street railroad, near Astoria. The machinery of this motor was originally built at the Grant Locomotive Works for a street railroad in Paterson, N. J., but for some reason the company did not accept it. John Stephenson built the car, and it is a model of convenience for the purpose it was built for. The chambers for holding the compressed air, are placed under the seats, under the car and in any place that affords room without taking any passenger space. Air of high tension is used, and its pressure is regulated by a reducer before passing to the cylinders. When the chambers have been filled, the car will run twelve miles before the pressure becomes exhausted. The engine works very smartly, the valve gear being of a peculiar type, after the Brown gear, but designed to meet the peculiar requirements of high-pressed air. This gear was designed by Mr. Hardie, who is an accomplished mechanical engineer, having been for years chief draftsman for John Elder & Co., the famous Glasgow ship-builders. During the trial trips at Astoria, the motor was run at a speed of twenty-five miles an hour, and an air-operated brake with which the car is equipped, stopped the motor very promptly.

The patents controlling this pneumatic motor are owned by Mr. J. R. White, of New York. The street railroad where the motor is now running was made to accommodate workmen and visitors to the famous Steinway piano factory. Mr. Steinway intends having more motors made on the same principle, with the view of operating the road entirely by means of pneumatic cars, thus doing away with horse power entirely. Very little skill is needed to operate the motor, two or three hours' practice being sufficient to make an ordinary man proficient at the work.

BUSINESS OF THE MASTER MECHANICS' CONVENTION.

The subjects for discussion at the eighteenth annual Convention of the Master Mechanics' Association are varied, important and interesting. The difficulty will be to find sufficient time for discussing all the subjects in the thorough manner desirable. "Improvement in Boiler Construction," which has been so prolific of discussion, and which has in past years elicited so much valuable information, is again under investigation by Messrs. J. Johann, J. Davis Barrett and Allen Cook. "New plans for Construction and Improvement in Locomotives," a subject suggested by the increasing desire to make the locomotive a more efficient steam engine, is under investigation by Messrs. W. Woodcock, G. W. Stevens and A. W. Sullivan. The wish to overcome the weak points of the link motion, is evinced by the appointment of Charles Blackwell, J. F. Devine and M. M. Pendleton to collect information regarding "Improvement in Valve Gear." Messrs. James Boon, J. S. Graham and J. P. Hovey are investigating the "Best Metal for Locomotive Bearings," a subject well worthy of careful attention, for hot boxes and loose brasses are still sources of much delay and expense. The advance that steel as a building material has made of late years, and the conflicting opinions expressed regarding it, have resulted in the appointment of Messrs. R. W. Bushnell, John Black and T. J. Hatswell to report on the merits of "Steel Castings for Locomotives." In view of the diverse views held by railroad men respecting the effect that driver brakes have upon the machinery of the locomotive, it was very proper that a committee should be appointed to investigate the matter. "Driving Wheel Brakes; to what extent is their use advisable?" is under investigation by Messrs. C. Berkley Powell and J. F. Crockett. "Is the Frequent Testing of Boilers by Hydraulic Pressure Advisable?" is a subject on which accurate information is wanted in view of the fact that certain State railroad commissioners are making periodical tests of this kind compulsory. The question is in charge of Messrs. H. N. Sprague, W. L. Hoffecker, and D. O. Shaver. The perennial subject, "Smoke-Stacks and Spark-Arresters," comes up again for discussion, and much new information may be expected arising from the increasing experience with extended smoke-boxes as a means of arresting sparks. Messrs. W. F. Turreff, J. B. Ross and W. T. Smith constitute the committee. In view of the rapid improvement that has been going on in methods of conducting shop operations during the last few years, it was desirable that a strong committee should have "Shop Tools and Machinery" in charge. The right men appear to have been found in Messrs. John Hewitt, Howard Smith and O. A. Haynes. Messrs. W. A. Smith and F. B. Miles will read papers. The Committee of Arrangements consists of Messrs. E. H. Williams, S. A. Hodgman and T. L. Chapman.

WE are informed that Mr. M. N. Forney has sent in his resignation as Secretary of the Master Car-Builders' Association, to take effect at the close of the annual convention to be held this month at Fortress Monroe. His desire to be relieved from the duties of the position has been repeatedly expressed, and also the reasons therefor, which are purely personal. In view of his long connection with the Association as one of its most active and efficient members, it was peculiarly fitting that he should act as its Secretary during the transition period of its reorganization. The zeal and ability with which he has labored to promote its usefulness by placing it on a more enduring and satisfactory basis, can only be fully appreciated by that portion of the membership whose personal relations with him enabled them to know the arduous nature of his duties as Secretary, and the diligence and perseverance with which they were performed. The announcement of his resignation will be received with regret, although his continuance as an active member will give to the Association the benefit of his counsel and experience in dealing with the important questions that are yet to come before it.

THE Central Pacific Railway will hereafter burn petroleum instead of coal in its Sacramento and other large shops.

WE have received several letters of late calling attention to defects in the existing rules governing the interchange of freight cars. Rule 20, relating to damages sustained by cars while on private tracks, is particularly objectionable, so much so, that some roads have given notice that they will not be bound by it. It is also urged that Rule 3 should be revised so as to make a distinction between cracked and broken wheels and those that only have chipped treads. The matter of spliced sills also needs attention. It is alleged that many roads make a practice of using two kinds of cards, one in conformity with the rule as it stands, and another with the addition, "This is not an order to repair." Rule 9, also, is defective in not recognizing the fact that it is next to impossible to return a car in as good condition as when it is received. These, and many other defects, will no doubt receive attention when the annual revision is made. The great trouble is, that the revisions are usually made in too much of a hurry. The work can not be well done without taking the necessary time for doing it.

IN the descriptive notice of the United States Standard Postal Car, in our last issue, we omitted to say that our illustrations were made from drawings sent us by Mr. Otto Bellingrodt, of Roanoke, Va., who is an accomplished railway draftsman, and was selected by the department to make the government drawings for these cars. Judging from the superior excellence of his work, it was a compliment well deserved.

THE President and Secretary of the Car-Builders' Association have issued a circular announcing the programme of arrangements for the convention at Fortress Monroe, from which we quote the following in reference to the entertainment of the members and the subscription of money for such purpose :

"At a recent meeting of the Executive Committee, a resolution was adopted instructing the President and Secretary to do all in their power to have the request with reference to the entertainment of members of the Association during the Conventions, which was contained in a resolution adopted in 1875, complied with. The following is the resolution referred to :

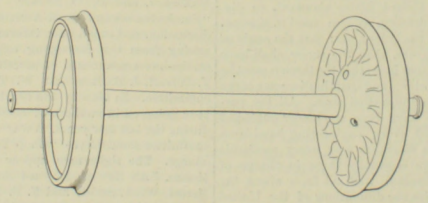
"*Whereas*, The practice of entertaining the members of this Association by its friends has become an established custom, and has thus assumed somewhat the character of an obligation to which those who have so generously dispensed hospitality have, in a measure, felt themselves obliged to conform ; and

"*Whereas*, The expenditure of time and money for this purpose has in many cases been very much greater than the members of this Association have the right to expect should be devoted to their enjoyment; and

Whereas, The expense of such hospitality has in some cases been interpreted as having a significance which has been the cause of embarrassment to members ;

"*Therefore*, We desire by this resolution, first, to express our thanks for the liberality of our friends in the past; and, secondly, to make the request in this public way, that in the future there shall be no more expenditure of money for the public entertainment of members of this Association."

"In compliance with these instructions, the President and Secretary of the Association express the hope that there will be no subscription of money in future for the entertainment of the members, and that the Association may thus be relieved of the duty of declining proffered hospitalities."



THE accompanying cut, representing a pair of 33-inch car-wheels on an M. C. B. standard axle, has been prepared at the suggestion of several leading car-builders, for the purpose of explaining wheel defects when sending bills to foreign roads or when making up statements. The method in which it is to be used is as follows : On each bill or statement an illustration of a pair of wheels is to be printed. When the cause of removal is entered, the location of the defect is marked upon the wheels or axle in the cut. In this way the location and extent of a defect may be indicated at a glance. The time required for the purpose is merely nominal, thus saving much labor and correspondence.

We have prepared the cut expressly for the convenience of those car-builders who may desire to use it, and will furnish electrotypes to those who may desire them at a merely nominal cost.

Boston & Providence Railroad Chair Cars.

We recently examined at Boston two particularly handsome reclining chair cars, built at the Bradley car shops, Worcester, for the New York, Providence & Boston Railroad. These cars are intended for service on the steamboat train between Stonington and Boston for the accommodation of passengers traveling between New York and Boston. The cars are 59 feet long and each holds 38 reclining chairs, which are of the Hartley pattern, are constructed so that the occupant can face any desired position, or recline in any position from the vertical to the perpendicular. The chairs are upholstered in crimson plush with bronze trimmings, and the hat racks of an artistic design are also of bronze. Solid mahogany is used for the doors and for the interior finish of the car, which has carved window headings and a handsomely decorated head lining of the monitor roof. A rich Brussels carpet covers the floor. There are 19 windows on each side with 22×34 inches plate glass, the windows being equipped with balanced curtains. Gas supplied by the Pintsch system is used for lighting, there being 20 jets inside each car and one jet under the bonnet of the monitor roof at the ends. A steel reservoir with a capacity sufficient for storing gas sufficient to light up the car for fifteen hours is placed under the car. A Baker & Smith heater occupies one corner of an end and the saloon the other. The trucks are the standard pattern used by the road, with 42-inch Allen paper wheels and Marden's steel brake beam, with malleable brake heads. The side beams are plated with iron. Gates of a neat pattern are placed on the platforms to prevent imbeciles from falling off and to comply with the Massachusetts law respecting the same. The Westinghouse automatic brake equipment is attached. The outside is painted the straw color so popular in New England, with lake letter board and striping.

A NEW locomotive, designed by Mr. Henney, superintendent of motive power, has recently been turned out of the New York, New Haven & Hartford Railroad Company's shops at Hartford. The engine, which is numbered 75, has a steel boiler 51⅛ inches diameter at the smallest ring. The fire-box is of the Buchanan type, which is spoken of very enthusiastically on this road. It is 68 inches long and 68 inches deep. There are 180 2-inch flues in the boiler, and they are 11 feet 4 inches in length. This boiler supplies steam to cylinders 17×22 inches, that turn driving-wheels 68 inches diameter. The frames are very heavy for this size of engine, being 4½ inches diameter. The lower bar in the back portion of the frame is placed in line with the center of the driving-axles, the intention being to put that strengthening part right in the line of the greatest strain. The driving boxes claim attention for their size, being 10 inches between wedges and 13½ inches long, with outside flange 1½-inch thick and inside flange 1½-inch thick. The face of the wedge is 5 inches wide. The rods are plain, with strap ends, the main rod being 7 feet 3 inches long. Wrought-iron cross-heads are used, with cast-iron gibs working in wrought-iron guides. The links are made with a very long radius, and instead of side plates to hold the box in position, they have slotted grooves running the length of link face, into which projections on the block slide. This plan gives good results in service, and the work of finishing the links in this way is said to be light. Brass oil-cups are placed on the eccentric straps in addition to the ordinary oil reservoir. Richardson balanced slide-valves are used. Two No. 7 Sellers injectors supply the only feeding medium. An extended front end is the means of restraining spark throwing, and the diaphragm is movable, being under control of the engineer, who, by using a lever, can raise or depress the diaphragm as the service the engine is doing may require. The engine is intended for fast passenger service.

MR. DAVID HOIT, Superintendent of the Gilbert Car Manufacturing Co., died at his home in Albany, May 19. He had been in declining health for more than a year, from what seemed to be a complication of maladies. He was for several years master car-builder of the Toledo, Wabash & Western road. In 1874 he was appointed to succeed Mr. Joseph Jones as master car-builder of the West Albany shops of the New York Central, which position he filled until about a year ago, when he accepted the appointment he held at the time of his death. He was also a valued member of the Master Car-Builders' Association, where he was highly esteemed for his personal qualities, as well as for his thorough practical knowledge of car construction. He was faithful in his attendance at the annual meetings, but his natural reserve disinclined him to take an active part in the discussions. As one of its oldest members, his death is a loss that will be deeply felt by his associates, among whom his experience and judgment were so highly appreciated.

THE MACHINE TOOL WORKS (Frederick B. Miles, engineer), Twenty-fourth and Wood streets, Philadelphia, has been united with the Industrial Works (William B. Bement & Son), Callowhill and Twenty-first streets, Philadelphia, and hereafter the two establishments will be conducted as one by William B. Bement, Clarence S. Bement, Frederick B. Miles and William P. Bement, under the firm name of Bement, Miles & Co.

THE HALE & KILBURN MFG. CO., of Philadelphia, have purchased the patent rights, stock, machinery and tools pertaining to the manufacture of car seats and car seat springs, recently carried on by Mr. Zenas Cobb, at Chicago, and will in future manufacture such seats and springs at their factory in Philadelphia.

THE *Railway Reporter*, for some years past published in Pittsburgh, by Mr. James G. Fulton, has been sold by him to Mr. George A. Frey, who has united the paper with the *Railway Record*, and will continue the publication of the paper under the name of the *Railway Reporter*. The office, however, will be removed from Pittsburgh to Philadelphia.

EAMES VACUUM BRAKE.—The company controlling this brake, which recently removed their headquarters from Watertown, N. Y., to Boston, Mass., have issued a very handsome catalogue describing the brake, its detailed parts and its method of application. The engravings are master-pieces. The catalogue enumerates all the patents under which the brake is made, shows where the brake is principally used and minutely describes its operation. There are three distinct brakes made under this company, the Eames Plain Vacuum Brake, the Eames Vacuum Automatic Brake and the Eames Driver Brake. The claim is made that the brake is cheap, simple and efficient.

Transportation to the Convention.

The New York, Philadelphia & Norfolk R. R. Co. the new short line to the South, announces that they have completed arrangements for carrying representatives to the convention of the Master Car-Builders' Association, to be held at Old Point Comfort, commencing June 9. Single trip tickets *via* Wilmington and Delmar, and excursion tickets, good to return *via* either Delmar or Washington, and accordingly a stop-over privilege at the latter point to enable members to attend the convention of the Master Mechanics, commencing June 16, will be issued at the lowest rates attainable.

Trains leave New York *via* Pennsylvania Railroad, at 6:20 A. M. and 8 P. M.; Philadelphia, 8:56 A. M. and 11:10 P. M., arriving at Old Point at 5:15 P. M. and 8:30 A. M.

Orders for reduced rate tickets will be furnished members and accompanying parties upon application to either M. N. Forney, Secretary, No. 73 Broadway, or Wm. Purcell, at the Master Car-Builders' rooms, No. 113 Liberty street, N. Y.

Our Directory.

We note the following changes since our last issue. Our readers will do us a great favor by giving us prompt notice of any changes that may come to their knowledge or of any errors that may be noticed in our list:

Baltimore & Ohio.—J. B. Washington is Acting General Superintendent in place of Mr. J. T. Harahan, who has gone to the Louisville & Nashville road.

Brunswick & Western.—Henry S. Morse has resigned the office of General Manager.

Camden & Atlantic and West Jersey.—A. G. Dayton has been appointed Superintendent of these roads in place of Joseph A. Crawford, transferred.

Canadian Pacific.—Archer Baker has resigned as General Superintendent of the Eastern Division.

Chicago Burlington & Quincy.—H. B. Stone, late Assistant General Manager, has been appointed General Manager of all lines owned and operated by the company east of the Missouri River, and G. W. Holdrege, heretofore Assistant General Manager, has been appointed General Manager of the Burlington & Missouri River road, including all lines operated by the company west of the Missouri.

Chicago & Grand Trunk.—A. B. Atwater has been appointed Superintendent in place of W. H. Pettibone.

Worcester, Nashua & Rochester.—A. R. Barrett has been appointed Master Mechanic and Master Car-Builder of this road, in place of John G. Brady, resigned. Mr. Barrett was formerly on the Atlantic & Pacific road.

Chicago & Northwestern.—Wm. Smith, late General Foreman of the Chicago shops, has been appointed Master Mechanic of the Winona & St. Peter Division, in place of W. A. Scott, promoted to Assistant Superintendent of Motive Power and Machinery.

Delaware, Lackawanna & Western.—W. B. Phelps has resigned as Superintendent of the Oswego & Syracuse Division.

Des Moines, Osceola & Southern.—James Donahue has been appointed Superintendent, and Wm. Persing Master Mechanic.

Kentucky Central.—H. E. Huntington is appointed Superintendent in place of George Bender, now on the Indianapols, Decatur & Springfield.

Louisville, New Albany & Chicago.—W. R. Woodard has been appointed General Superintendent of this road in place of T. L. Dunn.

Michigan Central.—C. E. Smart has been appointed General Master Mechanic of this road, in place of S. H. Edgerly, resigned.

Missouri Pacific.—L. Bartlett has been appointed Master Mechanic, with office at St. Louis, Mo.

New Brunswick.—F. W. Cram has been appointed General Manager in place of E. R. Burpee.

New York, Providence & Boston.—J. L. Hayden has been appointed Purchasing Agent, in place of Giles F. Ward, deceased.

Ogdensburg & Lake Champlain.—Wm. A. Short, late Master Mechanic of the Wisconsin Central Lines, has been appointed to the same position on this road.

Pennsylvania.—S. M. Prevost has been appointed Superintendent of Transportation, in place of John Reilly, resigned ; Robert E. Pettit, General Superintendent Pennsylvania Railroad Division, in place of S. M. Prevost, transferred, and Joseph A. Crawford, Superintendent New York Division, in place of R. E. Pettit, promoted.

St. Louis Bridge & Tunnel.—Geo. W. Walshe has been appointed Master Mechanic, in place of H. M. Smith, who has gone to the Virginia Midland.

Seaboard & Roanoke.—L. T. Myers has been appointed Superintendent, with office in Portsmouth, Va., in place of E. G. Ghio, deceased.

Texas & Pacific.—J. K. Lape has been appointed Master Mechanic, with office at Marshall, Texas.

Vicksburg, Shreveport & Pacific.—M. S. Belknap has been appointed Superintendent in place of F. Y. Dabney, resigned.

Virginia Midland.—J. E. Waddey has resigned as Master Mechanic, and H. M. Smith has been appointed as his successor.

Wabash, St. Louis & Pacific.—J. R. Barnes has been appointed Superintendent of Motive Power and Machinery, vice Jacob Johann, resigned.

DIRECTORY

of the Railroads of the United States and Canada, showing the gauge, length of road, number of locomotives and number of cars; and giving the names and titles of their principal officers in charge of the operating, purchasing and rolling stock departments.

A

Adirondack R. R. 4-8½ gauge 60 m. 3 lo. 62 cars.
C. E. Durkee, Supt ..... Saratoga, N. Y.
Jacob Myers, M. M ..... Saratoga, N. Y.
Jas. J. Traver, M. C. B ..... Saratoga, N. Y.
Addison & Northern Penn'a Ry. 3 g. 51 m. 5 lo. 50 c.
F. M. Baker, Gen. Supt ..... Addison, N. Y.
Alabama Great So'n R. R. (See Cin., N. O. & T. P.)
Albany & Susquehanna R. R. (See D. & H. Canal Co.)
Albemarle & Raleigh R. R. 4-8½ g. 33 m. 3 lo. 35 c.
Jas. H. Petty, Gen. Supt ..... Tarboro, N. C.
Albert Ry. 4-8½ g. 51 m. 3 lo. 35 cars.
G. A. Robinson, Man. & Pur. Agt. Hillsboro, N. B.
Jas. McKay, M. M. & C. B ..... Hillsboro, N. B.
Alexandria & Fredericksburg Ry. } (See Penna. R. R.; (7) Div.
Alexandria & Washington R. R. }
Allegheny Valley R. R. 4-9 g. 259 m. 70 lo. 2202 c.
David McCargo, Gen. Supt. & Pur. Agt.; and
C. B. Price, Supt. (Riv. Div.) ..... Pittsburg, Pa.
A. A. Jackson, Supt. (L. G. Div.). Reynoldsville, Pa.
W. A. Wood, M. M ..... Verona, Pa.
R. Gunning, M. C. B ..... Verona, Pa.
Alliance, Niles & Ashtabula R. R. (See Penna. Co.)
Annapolis & Elk Ridge R. R. 4-8½ g. 20 m. 4 lo. 29 c.
W. H. Bians, Supt. & Pur. Agt .. Annapolis, Md.
John L. Beall, M. Mach ..... Annapolis, Md.
Anniston & Atlantic R. R. 3 g. 9 m.
Tho. K. Scott, Supt ..... Anniston, Ala.
Antwerp & Paulding R. R. 4-8½ g. 6 m. 4 lo. 63 c.
E. C. Munson, Gen. Man ..... Antwerp, O.
William Fitzsimmons, Jr., Pur. Agt. Antwerp, O.
Arizona & New Mexico Ry. 3 g. 71 m. 3 l. 60 cars.
W. H. Jones, Gen. Supt. & P. A. Lordsburg, N. M.
W. C. Boylan, M. M. & M. C. B. Lordsburg, N. M.
Arkansas Midland R. R. 3-6 g. 63 m. 4 lo. 45 cars.
A. H. Johnson, Pr. & Gen. Man ... Helena, Ark.
J. B. Johnson, M. M. & M. C. B ... Helena, Ark.
Arkansas & Louisiana Ry. 4-8½ g. 28 m.
J. D. Beardsley, Supt ..... Washington, Ark.
Asheville & Spartanburg R. R. 5 g. 49 m. 2 lo. 12 c
Jas. Anderson, Supt. & Pur. Agt., Spart'b'g, S. C.
M. M ..... Spartanburg, S. C
Ashland Coal & Iron Ry. 4-8½ g. 22 m. 7 lo. 432 c.
Douglas Putnam, Jr., Gen. Supt. Ashland, Ky.
Robt. Peebles, Pur. Agt ..... Ashland, Ky.
E. M. Roberts, M. M ..... Ashland, Ky.
Ashtabula & Pittsburgh Ry. (See Penna. Co.)
Atchison, Topeka & Santa Fé R. R.
4-8½ g. 2,620 m. 348 lo. 9,629 cars.
A. A. Robinson, Gen. Man ..... Topeka, Kan.
Geo. B. Harris, Asst. Gen. Man ... Topeka, Kan.
Geo. Hackney, Supt. Mach ..... Topeka, Kan.
Clem. Hackney, Asst. Sup. Mach. Dept. do.
Geo. Hargraves, Pur. Agt ..... Topeka, Kan.
Eastern Div.: D. J. Chase, Supt. ... Topeka, Kan.
Henry Hull, G. F. Car Dept ..... Topeka, Kan.
John Fagan, M. M ..... Atchison, Kan.
J. M. Smith, M. M ..... Kansas City, Mo.
Alfred Taylor, M. M ..... Emporia, Kan.
Mid. Div.: H. R. Nickerson, Supt. Nickerson, Kan.
W. Y. Johnson, M. M ..... Nickerson, Kan.
W. Div.: C. M. Rathburn, Supt ..... La Junta, Col.
A. C. Stiles, M. M ..... La Junta, Col.
D. H. Dotterer, M. M ..... Raton, N. M.
Las Vegas Div.: Chas. Dyer, Supt. Las Vegas, N. M.
F. B. Woodruff, M. M ..... Las Vegas, N. M.
J. H. Holman, M. M ..... Wallace, N. M.
Rio Gr. Div.: P. F. Barr, Supt. San Marcial, N. M.
E. Hackett, M. M ..... San Marcial, N. M.
H. P. Olcott, M. M ..... Deming, N. M.
Geo. A. Hancock, M. M ..... El Paso, Tex.
Sonora Div.: 265 m.
L. H. Waugh, M. M ..... Guaymas, Mex.
Kan. Cy., Law. & So. Kan.
4-8½ g. 399 m. 24 lo. 787 c.
J. L. Barnes, Supt ..... Lawrence, Kan.
T. D. Volk, M. M ..... Ottawa, Kan
Atlanta & West Point R. R. (See Western of Ala.)
Atlantic & Danville Ry. 3 g. 17 m.
E. G. Sweatt, Gen. Man ..... Waverly, Va.
Atlantic & North Carolina R. R. (See Midland; N. C.)
Atlantic, Tenn. & Ohio R. R. (See Rich. & Dan.; (2) Div.)
Atlantic & Pacific R. R. 4-8½ g. 575 m.
F. W. Smith, G. Supt ..... Albuquerque, N. M.
F. P. Wherry, Pur. Agt ..... St. Louis, Mo.
Geo. Chalender, Supt. M. P. & M., and
Geo. F. Chalender, A. Supt. Albuquerque, N. M.
Augusta & Knoxville R. R. (See Port Royal & Aug.)
Austin & Northwestern R. R. 3 g. 60 m. 5 lo. 75 c.
J. A. Rhomberg, Gen. Man ..... Austin, Tex.

B

Bachman Valley R. R. (See Han. Junc., Han. & Gett.)
Balt. & Delaware Bay R. R. 4-8½ g. 50 m. 2 lo. 13 c.
Fred Gerker, Gen. M. & P. A. Chestertown, Md.
Baltimore & Hanover R. R. (See H. J., H. & G.)
Baltimore & Ohio R. R.
4-8½ g. 1,612 m. 574 lo. 17,339 cars.
B. Dunham, Gen. Man ..... Baltimore, Md.
N. S. Hill, Pur. Agt ..... Baltimore, Md.
Main Stem Div.: 4-8½ g. 972 m.
W. M. Clements, Gen. Supt ... Baltimore, Md.
A. J. Cromwell, M. of M ..... Baltimore, Md.
E. W. Grieves, M. C. B ..... Baltimore, Md.
Andrew Beckett, M. M ..... Baltimore, Md.
Wm. Edwards, M. M ... Martinsburg, W. Va.
Sam. Houston, M. M ..... Piedmont, W. Va.
Robert Maxwell, M. M ..... Cumberland, Md.
W. P. Harris, Supt. West of Cumberland, Md.
S. B. Crawford, M. M ..... Grafton, W. Va.
Alex. Laird, M. M ..... Parkersburg, W. Va.
W. B. McClung, M. M ..... Wheeling, W. Va.
Pitts. Div.: J. B. Washington, A. G. S. Pittsburgh, Pa.
I. N. Kalbaugh, M. of M ..... Connellsville, Pa.
Trans-Ohio Divs.: G. J. Foreacre, G. Supt. Newark, O.
W. H. Harrison, M. of Mach ..... Newark, O.
E. L. Weisgerber, M. M ..... Newark, O.
H. M. Ingler, M. M ..... Bellaire, O.
O. B. Perkins, M. M ..... Zanesville, O.
Thos. Taylor, M. M ..... Sandusky, O.
F. J. Gunther, M. M ..... Chicago Junction, O.
Chi. Div.: F. H. Britton, Supt. Trans. Chicago, Ill.
Benj. Lowther, M. M ..... Garrett, Ind.
W. H. Wilkinson, M. M ..... Kingston, Ill.
Newark & Straitsville Div.: N. Criswell, Shawnee, O.
Baltimore & Philadelphia. 4-8½ g. 40 m. 7 lo. 35 c.
B. Dunham, Gen. Man ..... Baltimore, Md.
D. Connell, Supt ..... Wilmington, Del.
Baltimore & Potomac R. R. (See Penna. R. R.; (7) Div.)
Bangor & Piscataquis R. R. 4-8½ g. 63 m. 4 lo. 87 cars.
Arthur Brown, Supt. & Pur. Agt .. Bangor, Me.
C. S. Nason, M. M ..... Bangor, Me.
J. W. Comins, M. C. B ..... Oldtown, Me.
Bangor & Portland Ry. 4-8½ g. 25 m. 3 lo. 3 c.
C. Miller, Pres. & Gen. Man ... Blairstown, N. J.
Barclay R. R. 4-8½ g. 16 m. 6 l. 200 c.
F. F. Lyon, Supt ..... Barclay, Pa.
J. A. Hardenburg, Pur. Agt .. 21 Cort. st., N. Y.
Wm. Johnson, M. M ..... Towanda, Pa.
Batesville & Brinkley R. R. 3 g. 40 m. 3 lo. 42 c.
R. W. Martin, Pres ..... Little Rock, Ark.
W. J. Thompson, Gen. Man .. Little Rock, Ark.
E. Summerfield, Gen. Supt ..... Brinkley, Ark.
John White, M. M ..... Brinkley, Ark.
Bath & Hammondsport R. R. 3 g. 10 m.
Allen Wood, Gen. Man .. Hammondsport, N. Y.
Baton Rouge, Grosse Tête & Opelousas R. R.
5-6 g. 29 m. 3 lo. 12 c.
D. C. Montan, Gen. Supt ..... Port Allen, La.
Bedford & Bloomfield Ry. 3 g. 43 m. 5 lo. 86 cars.
Jas. W. Kennedy, Gen. Supt. & Pur. Agt.; and
Capt. John Thumser, M. M ..... Bedford, Ind.
Jas. Richards, M. C. B ..... Bedford, Ind.
Bellaire, Zanesville & Cin. Ry. Co. 3 g. 112 m 5 lo. 71 c
S. L. Mooney, Pres ..... Woodsfield, O.
W. R. Crumpton, Gen. Man ..... Zanesville, O.
C. E. Hill, M. M ..... Zanesville, O.
Bell's Gap R. R. 4-9 g. 25 m. 5 lo. 148 cars.
R. G. Ford, Supt. & Pur. Agt ..... Bellwood, Pa.
Geo. Van Brunt, M. M ..... Bellwood, Pa.
A. Zimmerman, M. C. B ..... Bellwood, Pa.
Belt R. R. 4-8½ g. 12 m. 10 lo.
W. P. Ijams, Supt ..... Indianapolis, Ind.
Belt Ry. 4-8½ g. 27 m
Jas. D. Carson, Gen. Man ..... Chicago, Ill.
R. W. Johnson, M. M ..... Chicago, Ill.
Bennington & Glastonbury. 4-8 g. 10 m.
R. C. Root, Pres ..... Bennington, Vt.
Bennington & Rutland Ry. 4-8½ g. 59 m. 10 lo. 236 c.
E. D. Bennett, Supt. & Pur. Agt. Bennington, Vt.
Ghas. McMasters, M. M ..... Rutland, Vt.
Berlin Branch R. R. (See Han. Junc., Han. & Gett.)
Bingham, Canyon & Camp Floyd (See Den. & Rio Gr.)
Bladen, Columbus & Florida. 4-8½ g. 16 m. 2 lo. 2 c.
John Colville, Pres ..... Wilmington, N. C.
Bodie & Benton Ry. & Com. Co. 3 g. 34 miles
Thomas Holt, Supt. & Pur. Agt ..... Bodie, Cal
E. H. Barton, M. M. & C. B ..... Bodie, Cal.
Boston, Barre & Gardner. 4-8½ g. 37 m. 8 lo. 108 c
H. H. Marshall, Supt. & P. A .. Worcester, Mass.
Frank I. Goodwin, M. M ..... Worcester, Mass.
Boston, Hoosac Tunnel & W'n Ry.
4-8½ g. 87 m. 18 lo. 1,038 cars.
H. L. Morrill, Gen. Man .. Mechanicsville, N. Y.
C. H. Cory, Pur. Agt ..... Mechanicville, N. Y.
C. H. Cory, Supt. & M. M .. Mechanicville, N. Y.
John S. Ellis, M. C. B ..... Mechanicville, N. Y.
Boston, Revere Beach & Lynn R. R. 3 g. 9 m. 7 lo. 46 c.
C. A. Hammond, Supt. & P. Agt. Boston, Mass.
R. D. Sutherland, M. M ..... Boston, Mass.
John Coghlan, M. C. B ..... Boston, Mass.
Boston, Winthrop & Point Shirley R. R.
3 g. 10 m. 1 lo. 8 c.
C. A. Parks, Supt ..... Boston, Mass.
J. W. Davis, M. M ..... Winthrop, Mass.
Boston & Albany R. R. 4-8½ g. 372 m. 245 lo. 6,111 c.
W. H. Barnes, Gen. Man ..... Boston, Mass.
Edw. Gallup, Gen. Supt ..... Springfield, Mass.
A. B. Underhill, Supt. M. P ... Springfield, Mass.
F. D. Adams, Gen. M. C. B ..... Allston, Mass.
J. T. Chamberlain, For. C. shop Allston, Mass.
H. B. Chesley, Div. Supt ..... Boston, Mass.
G. H. Colby, Div. M. M ..... Boston, Mass.
C. E. Grover, Div. Supt ..... Springfield, Mass.
H. W. Eddy, Div. M. M ..... Springfield, Mass.
J. B. Weston, For. Car Sh. Springfield, Mass.
W. H. Russell, Jr., Div. Supt. E. Albany, N. Y.
T. B. Purvis, Div. M. M ... East Albany, N. Y.
J. E. Doran, For. Car Sh .. East Albany, N. Y.
Boston & Lowell R. R.
4-8½ g. 555 m. 147 lo. 3,262 cars.
C. S. Mellen, Gen. Supt ..... Boston, Mass.
F. H. Nourse, Pur. Agt ..... Boston, Mass.
Jas. K. Taylor, Supt. R. S. & M. Concord, N. H.
So. Div.: J. F. Crockett, Supt ..... Boston, Mass.
H. S. Kolseth, M. M ..... Boston, Mass.
No. Div.: Geo. A. Todd, Supt ..... Concord, N. H.
C. C. Aspinwall, M. M ..... Concord, N. H.
Wh. Mount Div.: W. A. Stowell, Supt. Concord, N. H.
Geo. A. Ferguson, M. M .. Lake Village, N. H.
Boston & Maine R. R. 4-8½ g. 491 m. 209 lo. 4,660 c.
J. T. Furber, Gen. Man ..... Boston, Mass.
Geo. J. Fisher, Pur. Agt ..... Boston, Mass.
Wm. Smith, Supt. M. P ..... Boston, Mass.
D. C. Richardson, M. C. B ..... Lawrence, Mass.
West. Div.: Wm. Merritt, Jr., Supt. Boston, Mass.
East. Div.: D. W. Sanborn, Supt. Boston, Mass.
North Div.:
J. W. Sanborn, Supt .. Wolfboro Junc., N. H.
Boston & N. Y. Air Line R. R. (See N. Y., N. H. & H.)
Boston & Providence R. R. 4-8½ g. 67 m. 52 lo. 1,006 c.
A. A. Folsom, Gen. Supt. & P. A. Boston, Mass.
Geo. Richards, M. M ..... Roxbury, Mass.
Jno. Lightner, M. C. B ..... Roxbury, Mass.
Bowling Green & Toledo R. R. 4-8½ g. 6 m. 2 lo. 4 c.
Wm. A. Wiggins, Gen. Man. Bowling Green, O.
Wm. A. Wiggins, Pur. Agt .. Bowling Green, O.
Bradford, Bordell & Kinzua R. R. 3 g. 42 m. 6 lo. 82 c.
Bradford, Eldred & Cuba. 3 g. 54 m. 6 l. 158 c.
Tonawanda Valley & Cuba. 3 g. 60 m. 5 lo. 31 c.
J. V. D. Loomis, Supt ..... Attica, N. Y.
Jno. Delaney, M. M. & C. B ..... Bradford, Pa.
Brattleboro' & Whitehall R. R. 3 g. 36 m. 3 lo. 56 c.
(Operated by Central Vermont.)
Breakwater & Frankford R. R. (See Del., Md. & Va.)
Bridgton & Saco River R. R. 2 g. 16 m. 2 lo. 19 c.
Wm. F. Perry, Gen. Supt ..... Bridgton, Me.
M. M. Caswell, M. M. & Pur. Agt. Bridgton, Me.
Brighthope Ry. 3 g. 37 m. 4 lo. 193 cars.
Jas. R. Worth, Supt ..... Richmond, Va.
P. M. Buckingham, Pur. Agt. Richmond, Va.
A. Gary, Supt. Way & Works. Winterpock, Va.
Robt. Kredell, M. M ..... Chester, Va.
Brooklyn, Bath & Coney Island R. R.
4-8½ g. 7 m. 8 lo. 36 cars.
Geo. A. Gunther, Gen. Man ... Brooklyn, N. Y.
Aug. Wolff, M. M ..... Brooklyn, N. Y.
Brooklyn, Flatbush & Coney Island Ry.
4-8½ g. 8 m. 8 lo. 54 c.
J. L. Morrow, Supt. & P. A ... Brooklyn, N. Y.
Wm. Finley, M. M ..... Brooklyn, N. Y.
Brooklyn & Rockaway Beach R. R.
4-8½ g. 3 m. 2 lo. 18 cars.
Wm. Warner, Supt ..... East New York, N. Y.
Brunswick & Western R. R. 5 g. 172 m. 13 lo. 170 c.
Gen. Man. & P. A .. Brunswick, Ga.
W. B. Kline, M. M ..... Brunswick, Ga.
Buff., N. Y. & Phil. R. R. 3 & 4-8½ g. 655 m. 120 l. 6,339 c.
Geo. S. Gatchell, Gen. Supt ..... Buffalo, N. Y.
W. W. Halsey, Asst. to G. Supt .. Buffalo, N. Y.
Allen Vail, M. M ..... Buffalo, N. Y.
Buff. Div.: Henry Dwyer, Supt ..... Buffalo, N. Y.
Roch. Div.: I. R. Watson, Supt ..... Olean, N. Y.
Pitts. Div.: E. H. Witter, Supt ..... Oil City, Pa.
H. J. Bookhammer, M. M ..... Oil City, Pa.
C. E. Turner, M. M ..... Olean, N. Y.
Burlington, Cedar Rapids & Northern Ry.
4-8½ g. 989 m. 96 lo. 4,206 cars.
C. J. Ives, Pres. & Gen. Supt. Cedar Rapids, Ia.
Robt. Williams, V. P. & G. Supt. Cedar Rapids, Ia.
T. Stickney, Pur. Agt ..... Cedar Rapids, Ia.
R. W. Bushnell, M. M. & C. B. Cedar Rapids, Ia.
Burlington & Lamoille R. R. 4-8½ g. 35 m. 4 lo. 64 c.
G. L. Linsley, Gen. Man. & Supt. Burlington, Vt.
F. G. Brownell, M. M ..... Burlington, Vt.
Burlington & Mo. Riv. R. R. (in Neb.) (See C. B. & Q.)
Burlington & North-West'n Ry. 3 g. 38 m. 3 lo. 97 c.
Burlington & Western R. R. 3 g. 15 m. 38 c.
E. S. Edger, Supt ..... Burlington, Ia.
Burlington & Ohio River R. R. 4-8½ g.
R. Tanner, Pur. Agt ..... Chicago, Ill.

C

California Northern R. R. 4-8½ g. 26 m. 2 lo. 17 c.
Andrew J. Binney, Gen. Man .. Marysville, Cal.
California Southern R. R. 4-8½ g. 127 m. 13 lo. 301 c.
J. N. Victor, Supt ..... National City, Cal.
J. M. Keith, M. M ..... National City, Cal.
Cambridge & Seaford. (See Penna. R. R.; (4) Div.)
Camden & Atlantic R. R. (See Penna. R. R.; (2) Div.)
Canada Southern Ry. (See Mich. Cen.; (2) Div.)
Canada Atlantic Ry. 4-8½ g. 135 m.
D. C. Linsley, Man ..... Ottawa, Ont.
M. Donaldson, M. M ..... Ottawa, Ont.
Canadian Pacific R. R. 4-8½ g. 1,742 m. 118 l. 2,726 c
W. C. Van Horne, Gen. Man ..... Montreal, Can.
Francis R. F. Brown, Mech. Supt. Montreal, Can.
W. H. Kelson, Gen. Storekeeper Montreal, Can.
E. Div.: Gen. Supt. Montreal, Can.
W. Div.: J. M. Egan, Gen. Supt .. Winnipeg, Man.
Ontario Div.: W. White, Gen. Supt. Montreal, Can.
Cape F'r & Yadkin Val. R. R. 4-8½ g. 112 m. 7 lo. 60 c.
W. M. S. Dunn, Gen. Supt ... Fayetteville, N. C.
Isaac W. Clark, M. M. & C. B .. Fayetteville, N. C.
Cape Girardeau Southwestern Ry.
4-8½ g. 52 m. 3 lo. 51 cars.
Louis Houck, Gen. Man .. Cape Girardeau, Mo.
W. A. Penney, Supt ..... Cape Girardeau, Mo.
D. L. Meyers, Pur. Agt ..... Cape Girardeau, Mo.
Fred Glover, M. M ..... Cape Girardeau, Mo.
Carolina Central R. R. (See Ral. & Aug.)
Carillon & Grenville Ry. 5-6 g. 13 m.
R. W. Shepard, Pres ..... Montreal, Can.
Carson & Colorado R. R. (See Va. & Truckee).
Catasauqua & Fogelsville. 4-8½ g. 25 m. 6 lo. 581 c.
C. W. Chapman, Supt. & P. A. Catasauqua, Pa.
J. Thomas, M. M ..... Hokendauqua, Pa.
Chas. J. Holbach, M. C. B ..... Catasauqua, Pa.
Catskill Mountain R. R. 3 g. 16 m. 2 lo. 26 cars.
Charles A. Beach, Supt ..... Catskill, N. Y.
Cazenovia, Canastota & De Ruyter. (See U., I. & E.)
Central and South-Western Railroads (Ga.).
5 g. 1,115 m. 145 lo. 2,008 cars.
W. G. Raoul, Pres ..... Savannah, Ga.
Wm. Rogers, Gen. Supt ..... Savannah, Ga.
C. H. Carson, Pur. Agt ..... Savannah, Ga.
Cen. Div.: D. D. Arden, M. M ..... Savannah, Ga.
T. F. Warwick, M. M ..... Augusta, Ga.
F. Devine, M. C. B ..... Savannah, Ga.
So.-West'n Div.: T. D. Kline, Supt ..... Macon, Ga.
D. M. Gugel, M. M ..... Macon, Ga.
S. A. Charplot, M. C. B ..... Macon, Ga.
Central R. R. of N. J. (See Phil. & Read.; N. J. Cen. Div.)
Central R. R. of S. C. (See Wil. & Wel.)
Central American & Pacific Ry. 3 g. 67 m. 1 lo. 11 c
W. C. Fitzsimmons, Gen. Supt. Escuintla, Guat.
Central Branch Union Pac. (See Mo. Pac.; (3) Div.)
Central Iowa Ry. 4-8½ g. 412 m. 50 lo. 2,313 cars.
E. L. Dudley, Supt ..... Marshalltown, Ia.
J. G. Johnston, Asst. Supt ..... Marshalltown, Ia.
D. D. Phelps, Asst. Supt ..... Monmouth, Ill.
C. H. Ackert, Pur. Agt ..... Marshalltown, Ia.
John Player, M. M. & M. C. B. Marshalltown, Ia.
Central Ontario Ry. 4-8½ g. 33 m. 4 lo. 66 cars.
J. B. McMullen, Gen. Man ..... Picton, Ont.
James Falconar, M. M ..... Trenton, Ont.
Central Pac. R. R. 4-8½ g. 4,303 m. 382 lo. 11,260 c.
A. N. Towne, Gen. Man ..... San Francisco, Cal.
J. A. Fillmore, Gen. Supt ... San Francisco, Cal.
R. H. Pratt, A. G. Supt ..... San Francisco, Cal.
J. R. Watson, Gen. Pur. Agt .. Sacramento, Cal.
A. J. Stevens, Gen. M. M ..... Sacramento, Cal.
W. McKenzie, Asst. G. M. M .. Sacramento, Cal.
Benj. Welch, Gen. M. C. B ..... Sacramento, Cal.
G. J. Turner, Asst. G. M. C. B. Sacramento, Cal.
Western; Visalia & Tulare Divs. and Northern Ry.
A. D. Wilder, Supt ..... W. Oakland, Cal.
G. D. Welch, M. M. (W. Div.) W. Oakland, Cal.
W. B. Ludlow, M. C. B. (W. Div.) do.
S. Johnson, M. M. (T. Div.) ..... Tulare, Cal.
J. B. Wright, Supt ..... Sacramento, Cal.
M. W. Cooley, M. M. (S. Div.) .. Rocklin, Cal.
Truckee Div.: J. H. Whited, Supt. Wadsworth, Nev.
Geo. Gregg, M. M ..... Wadsworth, Nev.
Wm. McPherson, F. Car Sh .. Wadsworth, Nev.
Humb't Div.: G. W. Coddington, Supt. Carlin, Nev.
W. F. Smith, M. M ..... Carlin, Nev.
J. C. Doughty, For. Car Sh ..... Carlin, Nev.
Salt Lake Div.: A. G. Fell, Supt ..... Ogden, Utah.
James Lamb, M. M ..... Terrace, Utah.
A. Sherburne, For. Car Sh ..... Ogden, Utah.
St. & Cop. R. R.: R. L. Myrick, Supt .. Stockton, Cal.
Los Angeles; and Yuma Divs. (So. Pac.):
E. E. Hewitt, Asst. Supt ..... Los Angeles, Cal.
James Velsir, M. M ..... Los Angeles, Cal.
T. T. Gilleland, For. Car Sh. Los Angeles, Cal.
Arizona Divs. (So. Pac.):
J. A. Muir, Asst. Supt ..... Tucson, Ariz.
W. F. Smith, M. M ..... Tucson, Ariz.
Rio Grande (S. Pac.) & El Paso (G. H. & S. A.) Divs.:
C. B. Seymour, Supt ..... El Paso, Texas.
J. L. Bonner, M. M ..... El Paso, Texas.
H. C. Standish, For. Sh ..... El Paso, Texas.
Central Texas & N'w'n R. R. (See Hous. & Tex. Cen.)
Central Vermont R. R. 4-8½ g. 864 m. 185 lo. 2,789 c.
J. W. Hobart, Gen. Man ..... St. Albans, Vt.
J. M. Foss, Gen. Supt ..... St. Albans, Vt.
W. J. Robertson, Supt. M. P ..... St. Albans, Vt.
No. Div.: I. B. Futvoye, Supt ..... St. Johns, P. Q.
Rut. Div.: J. Burdett, Supt ..... Rutland, Vt.
N. L. Davis, M. M. & C. B ..... Rutland, Vt.
Brattleboro & Whitehall R. R., and
Brat. Div.: E. F. Brooks, Supt ... Brattleboro, Vt.
New London No'n R. R. 143 m. 22 lo. 303 c.
C. F. Spaulding, Supt. & P. A. New London, Ct.
A. J. Robertson, M. M ..... New London, Ct.
S. O. Banks, M. C. B ..... New London, Ct.
Chagrin Falls & Southern R. R. 3 g. 6 m. 1 lo. 12 c.
W. Hutchings, Gen. Man ..... Chagrin Falls, O.
J. W. Williams, Gen. Supt ..... Chagrin Falls, O.
Charleston & Savannah Ry. 5 g. 115 m. 15 lo. 200 c.
H. S. Haines, Gen. Man ..... Savannah, Ga.
C. S. Gadsden, Gen. Supt ..... Charleston, S. C.
H. A. Ulmo, M. M ..... Savannah, Ga.
Charlotte, Columbia & Augusta R. R. (See Rich. & D.)
Chateaugay R. R. 3 g. 34 m. 8 lo. 380 cars.
A. L. Inman, Gen. Man ..... Plattsburg, N. Y.
J. M. Davies, Supt ..... Lyon Mountain, N. Y.
M. L. French, Asst. Supt ..... Plattsburg, N. Y.
Chatham Ry. 4-8½ g. 9 m.
J. B. Snowball, Man ..... Chatham, N. B.
Chattaroi Ry. 4-8½ g. 51 miles 11 loco. 483 cars.
F. H. Oliphant, Gen. Man. & P. A. Ashland, Ky.
J. R. Martin, M. M ..... Ashland, Ky.
Joseph P. Burleigh, M. C. B ..... Ashland, Ky.
Cheraw & Chester R. R. (See Rich. & Dan.; (2) Div.)
Cheraw & Darlington R. R. (See Wil. & Wel.)
Cheraw & Salisbury R. R. (See Wil. & Wel.)
Cherokee R. R. (See East & West.)
Cherry Valley R. R. 4-8½ g. 6 m. 3 lo. 6 cars.
E. T. Herndon, Supt ..... Midland, Mo.
Chesapeake, Ohio & South-Western.
4-9 g. 398 m. 62 lo. 1,345 c.
Jas. L. Frazier, Supt ..... Louisville, Ky.
H. E. Huntington, Pur. Agt ..... Louisville, Ky.
J. A. Dew, Mast. Trans ..... Paducah, Ky.
R. H. Briggs, Supt. M. P ..... Paducah, Ky.
D. L. Weaver, M. M ..... Elizabethtown, Ky.
Jno. Fitzgerald, M. M ..... Paducah, Ky.
Chesapeake & Ohio Ry. 4-8½ g. 642 m. 169 l. 5,120 c.
C. W. Smith, Gen. Man ..... Richmond, Va.
D. A. Sweet, Asst. to Gen. Man. Richmond, Va.
A. S. Emmons, Pur. Agt ..... Richmond, Va.
T. L. Chapman, Supt. M. P ..... Richmond, Va.
Eastern Div.: A. H. Wood, Supt .. Richmond, Va.
J. N. King, M. C. B ..... Richmond, Va.
J. B. Pierce, M. M ..... Richmond, Va.
Hunt. Div.: W. B. Ryder, Supt ..... Hinton, W. Va.
W. H. Thomas, M. M ... Huntington, W. Va.
H. C. Bassinger, M. C. B. Huntington, W. Va.
Lex. Div.: J. D. Yarrington, Supt. Lexington, Ky.
S. R. Tuggle, M. M ..... Lexington, Ky.
K. C. Div.: G. W. Bender, Supt .. Covington, Ky.
W. T. Smith, M. M ..... Covington, Ky.
Cheshire R. R. 4-8½ g. 80 m. 31 lo. 531 cars.
R. Stewart, Gen. Man ..... Keene, N. H.
H. H. Stone, Pur. Agt ..... Keene, N. H.
F. A. Perry, M. M ..... Keene, N. H.
A. E. Howard, M. C. B ..... Keene, N. H.
Chester & Lenoir Ry. (See Rich. & Dan.; (3) Div.)
Chicago, Bur. & Kan. City Ry. (See C. B. & Q.)
Chicago, Burlington & Quincy R. R.
4-8½ g. 3,608 m. 545 lo. 21,012 cars.
H. B. Stone, Gen. Man ..... Chicago, Ill.
(1) C., B. & Q., East of Mo. Riv.
Asst. Gen. Man ..... Chicago, Ill.
Wm. Irving, Gen. Pur. Agt ..... Chicago, Ill.
G. W. Rhodes, Supt. M. P ..... Aurora, Ill.
Wm. Forsyth, Mech. Eng ..... Aurora, Ill.
Ill. Divs.: J. D. Besler, Supt ..... Galesburg, Ill.
Chi. Div.: Geo. Alexander, Supt ..... Aurora, Ill.
L. E. Johnson, M. M ..... Aurora, Ill.
Galesburg Div.: F. C. Rice, Supt. Galesburg, Ill.
Robert Colville, M. M ..... Galesburg, Ill.
St. L. Div.: W. C. Brown, Supt. Beardstown, Ill.
A. Forsyth, M. M ..... Beardstown, Ill.
Ia. & Mo. Divs.: W. F. Merrill, Supt. Burlington, Ia.
East. Div.: O. E. Stewart, Supt. Burlington, Ia.
Joel West, M. M ..... Burlington, Ia.
Mid. Div.: J. B. Maxon, Supt ..... Ottumwa, Ia.
West'n Div.: J. H. Duggin, Supt ..... Creston, Ia.
C. W. Eckerson, M. M ..... Creston, Ia.
Chi., B. & Kan. C'y and St. L., Keo. & No.-W'n Rys.
Robt. Law, Gen. Supt ..... Keokuk, Ia.
W. H. Bartlett, M. M ..... Burlington, Ia.
(2) C. B. & Q., West of Mo. Riv.
G. W. Holdrege, Gen. Man ..... Omaha, Neb.
C. M. Wead, Supply Agt ..... Omaha, Neb.
D. Hawksworth, M. M ..... Plattsmouth, Neb.
C. M. Wead, Storek'pr ..... Plattsmouth, Neb.
Bur. & Mo. Riv. & Neb. Ry. Divs.:
T. E. Calvert, Gen. Supt ..... Lincoln, Neb.
D. E. Thompson, Supt ..... Lincoln, Neb.
E. Bignell, M. M ..... Lincoln, Neb.
R. V. Div.: A. Campbell, Supt ..... McCook, Neb.
A. & N. Div.: J. McConniff, Supt ..... Lincoln, Neb.
Chicago, Fairchild & Eau Claire R. R.
4-8½ g. 22 m. 4 lo. 28 cars.
N. C. Foster, Gen. Man ..... Fairchild, Wis.
C. I. Wickersham, Pur. Agt ..... Chicago, Ill.
Chicago, Iowa & Dakota Ry. 4-8½ g. 26 m
John Porter, Gen. Man ..... Eldora, Ia.
Chicago, Milwaukee & St. Paul R. R.
4-8½ g. 5,201 m. 626 lo. 19,018 cars.
Roswell Miller, Gen. Man ..... Milwaukee, Wis.
Jos. F. Tucker, Asst. Gen. M .. Milwaukee, Wis.
J. T. Clark, Gen. Supt ..... Milwaukee, Wis.
A. J. Earling, Asst. Gen. Supt. Milwaukee, Wis.
J. T. Crocker, Pur. Agt ..... Milwaukee, Wis.
J. M. Lowry, Gen. M. M ..... Milwaukee, Wis.
E. Fairbairn, M. M ..... Milwaukee, Wis.
John Baillie, Supt. Car Dept ... Milwaukee, Wis.
W. E. Kittridge, M. C. B ..... Milwaukee, Wis.
(1) C. & M. and C. & C. B. in Ill.:
G. O. Clinton, Supt ..... Chicago, Ill.
Ch. & C. B. in Ia.:
R. B. Campbell, Supt ..... Marion, Wis.
La C. & Wis. Val. Divs.:
W. G. Collins, Supt ..... Milwaukee, Wis.
P. du C. & M. Pt. Divs.:
S. J. Collins, Supt ..... Milwaukee, Wis.
(2) C. H. Prior, Asst. Gen. Supt .. Minneapolis, Minn.
H. & D. Div.: W. M. Kellie, Supt ..... do.
J. O. Pattie, M. M ..... Minneapolis, Minn.
Ia. & Minn. Div.: H. R. Williams, Supt. do.
S. Minn. Div.: F. D. Underwood, Supt. Lacrosse, Wis.
Riv. & Dub. Divs.: C. W. Case, Supt. Dubuque, Ia.
S. Charnley, M. M ..... Dubuque, Ia.
Ia. & Da. Div.: G. W. Sanborn, Supt. Mason City, Ia.
S. Cy. & Da. Div.: W. J. Underwood, Supt. Sioux Cy, Ia.
F. H. Moulton, M. M ..... Yankton, Dak.
J. M. Horan, For ..... Yankton, Dak.
(3) D. A. Olin, Asst. Gen. Supt ..... Racine, Wis.
R. & S. W. Divs.: D. L. Bush, Supt ... Racine, Wis.
John Taylor, M. M ..... Racine, Wis.
(4) Northern Div.: L. B. Rock, Supt. Milwaukee, Wis.
Wm. E. Kittredge, M. C. B .. Milwaukee, Wis.
Chicago, Rock Island & Pac. Ry.
4-8½ g. 1,381 m. 309 lo. 8,367 cars.
R. R. Cable, Pres. & Gen. Man ..... Chicago, Ill.
A. Kimball, V. P. & Gen. Supt ..... Chicago, Ill.
H. F. Royce, Asst. G. Supt ..... Davenport, Ia.
F. A. Marsh, Pur. Agt ..... Chicago, Ill.
T. B. Twombly, Gen. M. M ..... Chicago, Ill.
B. K. Verbryck, Gen. M. C. B ..... Chicago, Ill.
Ill. Div.: R. H. Chamberlin, Supt ..... Chicago, Ill.
R. Biester, M. M ..... Chicago, Ill.
Sam'l Pullman, M. C. B ..... Chicago, Ill.
Ia. Divs.: Jno. Given, Supt ..... Des Moines, Ia.
J. G. Crockett, M. M ..... Stuart, Ia.
Jas. E. Morrill, M. M ..... Davenport, Ia.
Chas. M. Leonard, M. C. B ..... Davenport, Ia.
K. & Des. M. Div.: Jno. Given, Supt. Des Moines, Ia.
S. W. Wakefield, M. M ..... Keokuk, Ia.
Henry Kummer, M. C. B ..... Keokuk, Ia.
So.-Wn. Div.: G. F. Walker, Supt ..... Trenton, Mo.
R. O. Carscadin, M. M ..... Trenton, Mo.
Chas. R. Best, M. C. B ..... Trenton, Mo.
Chicago, Saginaw & Canada R. R. (See Det., L. & N.
Chicago, St. Louis & New Orleans R. R. (See Ill. Cen.
Chicago, St. Louis & Pittsburgh R. R.
4-9 g. 635 m. 202 lo. 3,510 cars.
James McCrea, Manager ..... Columbus, O.
Wm. Mullins, Gen. Pur. Agt ... Pittsburgh, Pa.
Edward B. Wall, Supt. M. P ..... Columbus, O.
1, 3 & 5 Divs.: J. F. Miller, Supt. Richmond, Ind.
Robert Curtis, M. M ..... Columbus, O.
J. L. Copeland, G. F. Car Shops Columbus, O.
Wm. Swanston, M. M ..... Indianapolis, Ind.
W. C. Arp, Gen. For ..... Indianapolis, Ind.
2 & 4 Divs.: Chas. Watts, Supt. Logansport, Ind.
W. W. Reynolds, M. M ..... Logansport, Ind.
Chas. H. Starr, G. F. C. Shops, Logansport, Ind.
Chicago, St. Louis & Wn. R. R. 4-8½ g. 152 m. 11 lo. 1,799c.
F. E. Hinckley, Gen. Man ..... Chicago, Ill.
B. T. Lewis, Pur. Agt ..... Chicago, Ill.
A. H. Crocker, Supt ..... Streator, Ill.
J. N. Chilson, M. C. B ..... Streator, Ill.
Chicago, St. Paul, Minneapolis & Omaha Ry.
4-8½ g. 1,301 m. 181 lo. 5,459 cars.
J. M. Whitman, Gen. Supt ..... St. Paul, Minn.
W. H. S. Wright, Pur. Agt ..... St. Paul, Minn.
Matt. Ellis, M. M ..... St. Paul, Minn.
J. J. Ellis, Asst. M. M ..... St. Paul, Minn.
H. L. Preston, M. C. B ..... Hudson, Wis.
Ea. & No. Div.: A. A. Hobart, Supt. St. Paul, Minn.
St. Paul and Sioux City Div.:
H. Spencer, Supt ..... St. James, Minn.
H. C. Anderson, Asst. M. M ..... Sioux Cy, Ia.
Neb. Div.: Jas. McCabe, Supt ..... Omaha, Neb.
Chic., Tex. & Mexican Cent. Ry. (See Gulf, C. & S. F.)
Chicago & Alton R. R. 4-8½ g. 849 m. 213 lo. 6,168 c.
C. H. Chappell, Gen. Man ..... Chicago, Ill.
T. M. Bates, Supt. of Trans ... Bloomington, Ill.
A. V. Hartwell, Pur. Agt ..... Chicago, Ill.
Wm. Wilson, Supt. of Mach ... Bloomington, Ill.
Jos. Townsend, G. For. Car Dept. do.
Chi. Div.: A. M. Richards, Supt. Bloomington, Ill.
St. L. & K. C. Div.: S. D. Reeves, Supt. Roodhouse, Ill.
L. H. Miller, M. M ..... Slater, Mo.
Chicago & Atlantic Ry. 4-8½ g. 269 m.
F. Broughton, Gen. Man ..... Chicago, Ill.
J. H. Parsons, Supt ..... Chicago, Ill.
C. J. Domville, M. M ..... Huntington, Ill.
Chi. & East'n Ill. 4-8½ g. 252 m. 56 lo. 3,870 cars.
O. S. Lyford, Gen. Supt ..... Chicago, Ill.
D. R. Patterson, Pur. Agt ..... Chicago, Ill.
P. W. Drew, M. Trans ..... Chicago, Ill.
Allen Cooke, M. M ..... Danville, Ill.
Chicago & Grand Trunk Ry. (See Grand Trunk.
Chicago & Great Southern Ry.
4-8½ g. 124 m. 4 lo. 122 c.
Geo. C. Kimball, Rec ..... Attica, Ind.
H. Crawford, Jr., Supt ..... Chicago, Ill.
Chicago & Iowa R. R. 4-8½ g. 104 m. 18 lo. 237 cars.
T. J. Potter, Gen. Man ..... Chicago, Ill.
W. H. Holcomb, Gen. Supt ..... Rochelle, Ill.
H. S. Bryan, M. M ..... Aurora, Ill.
Chicago & Northwestern Ry.
4-8½ g. 3,761 m. 647 lo. 21,200 cars.
Marvin Hughitt, 2d V. Pres. & G. M. Chicago, Ill
C. C. Wheeler, Gen. Supt ..... Chicago, Ill
R. H. McCullough, Ass't Gen. Supt. Chicago, Ill
R. W. Hamer, Pur. Agt ..... Chicago, Ill.
Geo. W. Tilton, Supt. M. P. & M.; and
W. A. Scott, A. Supt. M. P. & M .. Chicago, Ill
Wis. Div.: Ed. J. Cuyler, Supt ..... Chicago, Ill.
Gal. Div.: Chas. Murray, Supt ..... Chicago, Ill.
Pen'a Div.: W. F. Fitch, Supt ..... Escanaba, Mich.
J. Symons, M. M ..... Escanaba, Mich.
Mad. Div.: C. A. Swineford, Supt .. Baraboo, Wis.
H. D. Page, M. M ..... Baraboo, Wis.
Minn. & Dak. Divs.: S. Sanborn, Asst. Gen. Supt.
Wis., St. P. & Dak. Div.:
W. A. Scott, M. M ..... Winona, Minn.
Dak. Cen. Ry.: J. S. Oliver, Supt ..... Huron, Dak.
Ia. Div.: H. G. Burt, Supt ..... Boone, Ia.
Geo. W. Lowe, M. M ..... Clinton, Ia.
No. Ia. Div.: M. Hopkins, Supt ... Eagle Grove, Ia.
Win. & St. P. Div.:
W. P. Cosgrave, Supt ..... Winona, Minn.
Wm. Smith, M. M ..... Winona, Minn.
Chicago & West Michigan:
4-8½ g. 409 m. 47 lo. 1,629 cars.
J. B. Mulliken, V. P. & G. Man. Muskegon, Mich.
J. K. V. Agnew, Gen. Supt. Grand Rapids, Mich.
Allen Bourne, Pur. Agt ..... Detroit, Mich.
W. F. N. Davis, M. M ..... Muskegon, Mich.
Chicago & West'n Ind. R. R. 4-8½ g. 50 m. 12 lo. 150 c.
James D. Carson, Gen. Man ..... Chicago, Ill.
R. W. Johnson, M. M ..... Chicago, Ill.
Cincinnati, Columbus & Hocking Val. Ry.
4-9 g. 25 m. 2 lo. 77 cars.
D. P. Hyatt, Gen. Man ..... Dayton, O.
Cin., Georgetown & Portsmouth. 3 g. 35 m. 3 lo. 45 c.
M. Simmons, Supt ..... Cincinnati, O.
F. Enler, M. M ..... Cincinnati, O.
Cincinnati & Green River Ry. 5 g. 17 m. 2 lo. 50 c.
G. B. Harper, Supt ..... Yosemite, Ky.
Matt. Horton, M. M ..... Yosemite, Ky.
Cin., Hamilton & Dayton R. R. 4-9 g. 352 m. 92 l. 2,932 c.
W. F. Stark, Asst. Supt ..... Cincinnati, O.
John Black, Gen. M. M ..... Lima, O.
W. H. H. Allison, M. C. B ..... Cincinnati, O.
Cincinnati, Hamilton & Indianapolis R. R.
4-8½ g. 98 m.
C. J. Hepburn, Supt ..... Cincinnati, O.
Day. & Mich. Div.:
Cincinnati, Indianapolis, St. Louis & Chicago Ry.
4-8½ g. 384 m. 71 lo. 3,279 cars.

J. W. Sherwood, *Supt* ....Indianapolis, Ind.
Geo. Tozzer, *Pur. Agt*........Cincinnati, O.
J. S. Patterson, *M. of Mach. & M. C. B.* Cincinn., O
Cincinnati, New Orleans & Texas Pacific Ry. Co.
5 g. 846 m. 123 lo. 3,464 cars.
John Scott, *Gen. Man*...........Cincinnati, O
Richard Carroll, *Gen. Supt*.......Cincinnati, O.
R. W. Healey, *Gen. Pur. Agt*......Cincinnati, O.
James Meehan, *S. M. P. & M*... Cincinnati, O.
Cin. So. Div.: W. W. Wells, *Supt*..Somerset, Ky.
J. L. Tomlinson, *Asst. S. M. P.*.. Ludlow, Ky
John Richardson, *M. C. B*.... .Cincinnati, O.
A. Thomson, *M. M*.... ...Chattanooga, Tenn.
Ala. Gr. S'n Div.: D. McLaren, *Supt.*, and
George Manuell, *M. M*....Chattanooga, Tenn
J. M. Kelly, *M. C. B*......Chattanooga, Tenn.
V. & M. Div.: E. F. Raworth, *Supt.*, and
M. M.....Vicksburg, Miss.
V.S. & P. Div.: M. S. Belknap, *Supt.* Monroe, La.
W. Bell Smith, *M. M. & C. B*.....Monroe, La.
New Orleans & North-Eastern R. R.
Edmund L. Tyler, *Supt*.....New Orleans, La.
I. W. Fowle, *M. M*.............Meridan, Miss.
Cincinnati Northern Ry.
Geo. L. Barringer, *Gen. Man* ...Cincinnati, O.
Cincinnati, Richmond & Chicago R. R. 4-9 g. 37 m.
C. J. Hepburn, *Supt*.............Cincinnati, O.
Cincinnati, Selma & Mobile R.R. 5 g. 71 m. 6 lo. 148 c.
A. McCollister, *Supt*..................Selma, Ala.
H. L. Wright, *Pur. Agt*.............Selma, Ala.
J. M. Levis, *M. M*...................Marion, Ala.
Cincinnati, Van Wert & Michigan R. R.
4-9 g. 94 m. 8 lo. 168 cars.
E. Garrison, *Supt*..................Van Wert, O.
D. R. Ennis, *Pur. Agt*...........Van Wert, O.
H. H. Garr, *M. M. & M. C. B*......Van Wert, O.
Cin., Wabash & Mich. Ry. 4-8½ g. 165 m. 13 lo. 402 c.
Norman Beckley, *Gen. Man. & P. A.* Elkhart, Ind.
O. W. Lamport, *Supt*............Wabash, Ind.
S. B. Tinker, *M. M. & M. C. B* ...Wabash, Ind
Cin., Wash. & Balt. 4-8½ g. 312 m. 65 lo. 1,889 cars
Jas. H. Stewart, *Gen. Man*.......Cincinnati, O.
Edw. Evans, *M. M* ....Chillicothe, O.
T. G. Duncan, *Supt. Car Dept*.......Zaleski, O.
Cincinnati, Wheeling & New York R.R. 4-8½ g. 13 m.
T. M. Atkinson, *Gen. Man*..........Batesville, O.
Cincinnati & Eastern Ry. 3 g. 68 m. 6 lo. 133 cars.
4-8½ g. 50 m. 3 lo.
S. Woodward, *Rec* .... Cincinnati, O.
G. H. Wilber, *Gen. Sup. & Pur. Agt.* Cincinnati, O.
A. Donaldson, *M. M*..............Newtown, O.
P. W. Naughton, *M. M* ....Batavia, O.
Cincinnati & South-Eastern Ry. 4-8½ g. 18 m.
John V. Patton, *Gen. Man*... . .Newport, Ky.
Clarksburg, Weston & Glenville R. R.
3 g. 26 m. 3 lo. 45 cars.
A. H. Kunst, *Pres. & Gen. Man.* Weston, W. Va.
Sam. A. Steel, *M. M*.............Weston, W. Va.
F. Dillie, *M. C. B*........ .. ..Nottingham, O.
Cleveland, Columbus, Cincinnati & Indianapolis & St Louis Rys. and Dayton & Union R. R.
4-8½ g. 785 m. 246 lo. 7,988 cars.
E. B. Thomas, *Gen. Man*..........Cleveland, O.
J. L. Yale, *Pur. Agt*........... ....Cleveland, O.
W. F. Turreff, *Gen. M. M*.........Cleveland, O.
Col. & Cin. Div.: Robt. Blee, *Supt* .Cleveland, O.
Wm. Garstang, *M. M*...........Cleveland, O.
A. G. Steinbrenner, *G. For. Car Dept.* do.
Ind'p'lis Div.: John O. Ewan, *Supt.* Ind'polis, Ind
T. W. Ranson, *M. M* ......Brightwood, Ind.
N. Mark, *G. For. Car Dept.* Brightwood, Ind.
Ind.& St L Ry.: Tho. Burrows, *Supt.* St. Louis, Mo.
T. W. Ranson, *M. M. & C. B.* Brightwood, Ind.
Day. & Un. Rd.: J. H. Barrett, *Supt*...Dayton, O.
H. S. Gordon, *For. M. Shops* ......Dayton, O.
Clevel'd, Delphos & St. Louis R.R. 3 g. 56 m. 3 lo. 39 c.
I. H. Burgoon, *Gen. Man*...........Delphos, O.
B. F. Marshall, *M. M*...............Delphos, O.
Cleveland, Indiana & St. Louis R. R.
4-8½ g. 19 m. 2 lo. 20 cars.
J. A. Larned, *Rec. & Supt*......Anderson, Ind.
Cleveland, Mt. Vernon & Delaware R. R.
4-9 g. 144 m. 24 lo. 886 c.
N. Monsarrat, *Gen Supt*..............Akron, O.
G. M. Taylor, *M. M. & C. B*.....Mt. Vernon, O.
Cleve., Youngstown & Pitts. R. R. 3 g. 30 m. 3 lo. 138 c.
D. T. Lumley, *Gen. Supt*.. ....Alliance, O.
C. H. Dorman, *M. M. & M. C. B*....Alliance, O.
Cleveland, Lorain & Wheeling Ry.
4-8½ g. 158 m. 31 lo. 1,878 cars.
Oscar Townsend, *Gen. Man* ......Cleveland, O.
Wm. Thornburg, *Supt*......... . ..Lorain, O.
A. Warburton, *Gen. For*.............Lorain, O.
Cleve. & Marietta R. R. (*See Wheel. & Lake Erie.*)
Cleveland & Pittsburgh. (*See Penna. Co.; (4) Div.*)
Clifton & Port Hudson R. R. 4-8½ g. 22 m. 3 lo. 12 c.
John Bradley, *Supt*......... .New Orleans, La.
W. F. Lockwood, *M. M*.......... ..Clinton, La.
E. D. Anderson, *M. M*.........Vicksburg, Miss.
Clove Branch R. R. 4-8½ g. 8 m. 1 lo. 61 cars.
C. L. Kimball, *Supt* ..... .Matteawan, N. Y.
W. G. Vanbuskirk, *M. M*...Dutchess Jc., N. Y.
Coburg, Peterborough & Marmora Ry.
5-6 g. 47 m. 5 lo. 255 cars.
Jas. R. Barber, *Gen. Supt*... ....Cobourg, Ont.
Jas. Clark, *M. M*.......... Cobourg, Ont
John Tinney, *M. C. B*............Cobourg, Ont.
Colorado Central R. R. (*See Un. Pac.; (4) Div.*)
Columbia & Greenville R. R. (*See Rich. & D.; (3) Div.*)
Columbia & Puget Sound R.R. 3 g. 21 m. 7 lo. 114 c.
J. L. Howard, *Gen. Supt*.. San Francisco, Cal.
Columbus, Hocking Valley & Toledo Ry.
4-9 g. 324 m. 90 lo. 7,353 cars.
G. R. Carr, *Gen. Supt*..............Columbus, O
W. M. Greene, *Pur. Agt*...........Columbus, O.
Ira G. Hutchins, *M. M*.........Columbus, O.
J. M. Rockafield, *M. C. B*.... ... .Columbus, O.
Tol. Div.: M. T. Seymour, *Supt*......Columbus, O.
Hock. V. Div.: M. P. L. Booth, *Supt.* Columbus, O.
Ohio Riv. Div.: C. D. Norris, *Supt*.......Logan, O.
Columbus & Eastern R. R. In progress
J. E. Redfield, *Pres*....... ...Columbus, Ohio.
Columbus & Maysville Ry. (*See Cin. & East.*)
Columbus & Rome R. R. 3 g. 33 m. 3 lo. 30 cars.
M. E. Gray, *Supt* .... .Columbus, Ga.
Columbus & Western Ry. 5 g. 89 m. 6 lo. 53 cars
E. A. Flewellen, *Gen. Man.* ...Columbus, Ga.
R. A. Bridges, *M. M* ....Opelika, Ala.
Concord R. R. 4-8½ g. 141 m. 41 lo. 1,264 cars.
H. E. Chamberlin, *Supt. & P. Agt.*. Concord, N.H.
J. T. Gordon, *M. M. & C. B.* .Concord, N. H
Concord & Claremont R. R. (*See Northern of N. H.*
Conn. Riv. and Ver. Val. R. Rs. 4-8½ g. 130 m. 42 lo. 554 c.
J. Mulligan, *Supt. & Pur. Agt.* Springfield, Mass.
W. H. Stearns, *M. M. & M. C. B.*. Springfield, Mass.
Conn. & Passumpsic Rivers R. R. (*See Passumpsic*)
Connotton Valley R. R. 3 g. 160 m. 26 lo. 1,036 cars.
Samuel Briggs, *Gen. Man*..... .Cleveland, O.
John Bean, *M. M*.......... ...... .Canton, O.
Cooperstown & Susquehanna Valley R. R.
4-8½ g. 16 m. 2 lo. 14 cars.
Andrew Shaw, *Pres* ....Cooperstown, N. Y.
A. Mumford, *M. M*.........Cooperstown, N. Y.
Corning, Cowanesque & Antrim Ry. (*See Syr., G. & C.*)
Cornwall R. R. 4-8½ g. 12 m. 5 lo. 166 cars
J. M. Havard, *G. Supt. & M. M*....Lebanon, Pa.
Levi Bionch, *M. C. B* ....Lebanon, Pa.
Cornwall & Lebanon R. R. 4-9 g. 5 m.
J. C. Jennings, *Supt* ....Lebanon, Pa.
Coudersport & Port Allegheny R. R.
3 g. 17 m. 2 lo. 64 cars.
B. A. McClure, *Gen. Supt*.....Coudersport, Pa.
Credit Valley Ry. 4-8½ g. 184 m. 22 lo. 535 cars.
Wm. Whyte, *Gen. Supt*..... .....Toronto, Ont.
John Macnab, *Pur. Agt*..... .....Toronto, Can.
D. Preston, *Mech. Supt*....... ...Toronto, Can.
Crescent Springs Ry. 3 g. 12 m. 2 lo. 50 c.
David Joyce, *Gen. Man*..........Lyons, Ga.
W. R. Bourm, *Asst. Gen. Man.* Shell Lake, Wis.
John Devereaux, *Gen. Supt*...Shell Lake, Wis.
C. I. Wickersham, *Pur. Agt*......Chicago, Ill.
Ira Wood, *Supt. M. P. & M*...Shell Lake, Wis.
John Blackburn, *M. C. B* .....Shell Lake, Wis.
Crooked Creek R. R. 3 g. 9 m. 1 lo. 37 cars.
Walter C. Willson, *Gen. Man.* Webster City, Ia.
Geo. W. Post, *Pur. Agt*.......... Lehigh, Ia.
Crown Point Iron Co.'s R. R. 3 g. 13 m. 3 lo. 135 c.
A. L. Inman, *Gen. Man*...... .Plattsburg, N. Y.
H. L. Reed, *Pur. Agt*......Crown Point, N. Y.
Jas. McMann, *Supt*.........Crown Point, N. Y.
C. W. Sanders, *M. M*...... .. Crown Point, N. Y.
Cumberland Ry. 4-8½ g. 32 m. 1 lo. 64 c.
J. A. Killam, *Gen. Man*.........Parsboro, N. S.
K. McKinnon, *M. M*..............Parsboro, N. S.
Cumberland Valley R. R. 4-9 g. 127 m. 25 lo. 474 cars.
J. F. Boyd, *Supt*...... .....Chambersburg, Pa.
A. S. Hull, *M. M*...... ...Chambersburg, Pa.
C. Wicke, *M. C. B*..........Chambersburg, Pa.
Cumberland & Maurice River R. R. 4-8½ g. 20 m.
L. H. Dowdney, *Supt*........Port Norris, N. J.
Cumberland & Penn. R. R. 4-8½ g. 55 m. 28 lo. 625 c.
P. L. Burwell, *Gen Supt & P. A.* Cumberland, Md.
N. W. Howson, *Mast. of Mach.* Mt. Savage, Md.
Nathan Binix, *M. C. B*...... ...Mt. Savage, Md.

D

Danville & New River R. R. 3 g. 43 m. 2 lo. 30 c.
W. T. Sutherlin, *Gen. Man*........Danville, Va.
W. T. Whittaker, *M. M*............Danville, Va.
Danbury & Norwalk R. R. 4-8½ g. 36 m. 7 lo. 112 c.
C. M. Crawford, *G. Supt. & P. A.*. S. Norwalk, Ct.
W. H. Wilkinson, *M. M. & C. B.* Danbury, Conn.
Danville, Mocksville & So.-Wn. R. R. 3 g. 28 m.
H. M. Shivler, *Supt*...........Leakesville, N. C.
Danville, Olney & O. R. R.R. 4-8½ g. 78 m. 3 lo. 34 c.
C. E. Henderson, *Rec. & Man*.........Olney, Ill.
W. A. Bell, *M. M. & C. B*.. .... ..Kansas, Ill
Dayton & Toledo R. R. 3 g. 96 m.
C. E. Henderson, *Gen. Man*...... ..Dayton, O.
J. E. Gimperling, *Supt*.... ....Dayton, O.
Dayton & Union R. R. (*See Clev., Col., Cin. & Ind.*)
Dayton & Michigan R. R. (*See Cin., Ham. & Day.*)
Dayton & Ironton R. R.
C. E. Henderson, *Gen. Man.* Indianapolis, Ind.
H. C. Norton, *Pur. Agt*... .Indianapolis, Ind.
E. Heisrodt, *Supt. Mach*...... .....Dayton, O.
Del. Lackawanna & W. and N. Y., Lack. & W. R. Rs.
4-8½ g. 930 m. 436 lo. 31,989 cars.
Wm. F. Halstead, *Gen. Supt*.. ...Scranton, Pa.
G. W. B. Cushing, *Pur. Agt*. . New York, N. Y
Walter Dawson, *Mast. of Mach*...Scranton, Pa.
Robt. McKenna, *M. C. B* .. . .Scranton, Pa.
Bloomsb'g Div.: C. Graham, *M. M.*. Kingston, Pa.
Utica Div.: A. C. Salisbury, *Supt*....Utica, N. Y.
Thos. Thatcher, *M. M* ....Utica, N. Y.
Morris & Essex Div.; Sussex; P. & D. and C. R. Rs.
A. Reasoner, *Supt*............Hoboken, N. J.
W. H. Lewis, *M. M*......... Kingsland, N. J.
J. W. Baker, *Mast. Car Rep.* ....Dover, N. J
Oswego & Syracuse Div.:
W. K. Niver, *Supt*..............Oswego, N. Y.
Jas. Buchanan, *M. M.* .. . Syracuse, N. Y.
Syracuse, Binghamton & New York R. R.
4-8½ g. 81 m. 20 lo. 598 cars.
W. K. Niver, *Gen. Supt*... ...Syracuse, N. Y.
Jas. Buchanan, *M. M*.........Syracuse, N. Y.
Cayuga Div.: *Supt* Ithaca, N.Y.
Buffalo Div.: T. B. Griffith, *M. M*.. Buffalo, N. Y.
Delaware, Maryland & Virginia R. R.
4-8½ g. 101 m. 7 lo. 145 cars.
Tho. Groom, *Supt*..... ....Lewes, Del.
Geo. Messick, *M. M*..................Lewes, Del.
W. H. Virden, *M. C. B*...............Lewes, Del.
Delaware River R. R. 4-8½ g. 20 m. 3 lo. 8 cars.
E. H. Green, *Supt*..........Pedricktown, N. J.
Delaware Western R. R. (*See Balt. & Phil.*)
Delaware & Chesapeake R. R. (*See Penna.; (4) Div.*)
Delaware & Hudson Canal Co.
4-3 and 4-8½ g. 634 m. 180 lo. 10,799 cars.
C. F. Young, *Pres. & Gen. Man.* Honesdale, Pa.
H. G. Young, *Asst. Gen. Man*....Honesdale, Pa.
J. White Sprong, *Pur. Agt*.......Albany, N. Y.
R. C. Blackall, *Supt. of Mach*.....Albany, N. Y.
Susq. Div.: C. D. Hammond, *Supt.* Albany, N. Y.
Tho. Howard, *M. M*.............Oneonta, N. Y.
J. R. Skinner, *M. C. B* ....Oneonta, N. Y.
Sar. & Ch. Divs.: T. Voorhees, *Supt*...Troy, N. Y.
J. L. Corey, *M. M*...... . Green Island, N. Y.
Chr. Körner, *M. C. B*.. .. Green Island, N. Y.
Pa. Div.: R. Manville, *Supt & Pur Agt.* and
S. H. Dotterer, *M. M*.... ....Carbondale, Pa.
T. Orchard, *M. C. B*......... Carbondale, Pa.
Denver Circle R. R. 3 g. 12 m. 7 lo. 15 cars
Theo. C. Henry, *Gen. Man*.........Denver, Col.
T. W. Pelham, *Gen. Supt*..........Denver, Col.
Denver, Utah & Pacific R. R. 3 g. 34 m. 4 lo. 171 c.
L. M. Fouts, *Supt*...... ....Denver, Col.
Denver & New Orleans. 4-8½ g. 140 m. 11 lo. 400 c.
C. W. Fisher, *Gen. Man*............Denver, Col.
Chas. Wheeler, *Pur. Agt*..........Denver, Col.
J. H. Kirk, *M. M. & M. C. B*. ...Denver, Col.
Denver & Rio Grande Ry. 3 g. 1,317 m. 222 lo. 5,932 c.
W. S. Jackson, *Rec*.................Denver, Col.
C. M. Hobbs, *Pur. Agt* ....Denver, Col.
N. W. Sample, *Supt. M. P. & M* ...Denver, Col.
(1) Col. & N. M. Div.: R. E. Ricker, *G. S.* Denver, Col
1st Div.: W. W. Borst, *Supt*.......S. Pueblo, Col.
2d Div.: Cole Lydon, *Supt*..... ... Alamosa, Col.
3d Div.: G. W. Cook, *Supt*........Leadville, Col.
4th Div.: R. M. Ridgway, *Supt*.......Salida, Col.
Denver, Rio Grande & Western Ry. 3 g. 369 m.
W. H. Bancroft, *Rec. & Gen. Supt.*,
Salt Lake City, Utah
A. L. Horner, *Ass't Supt.* Salt Lake City, Utah.
S. C. Smith, *M. M*.... ...Salt Lake City, Utah.
Des Moines, Osceola & Southern R. R.
3 g. 100 m. 7 lo. 253 cars
Jas. Donahue, *Supt*..............Des Moines, Ia.
Wm. Persing, *M. M*... ....Osceola, Ia.
Elias Tonet, *M. C. B*................Osceola, Ia.
Des Moines & Ft. Dodge. 4-8½ g. 144 m. 13 lo. 350 c.
C. N. Gilmore, *Supt*..............Des Moines, Ia.
John McGrayel, *M. M*......Grand Junction, Ia.
E. A. Avery, *M. C. B* ....Grand Junction, Ia.
Det., Bay City & Alpena R. R. 3-2 g. 48 m. 5 lo. 227 c.
Milo Eastman, *Supt*......... East Tawas, Mich.
Det. Gr. H. & Mil. Ry. (*See Grand Trunk.*)
Det., Lansing & No'n R. R. 4-8½ g. 222 m. 84 lo. 1027 c
John B. Mulliken, *Gen. Man*......Detroit, Mich.
Allan Bourn, *Pur. Agt*............Detroit, Mich.
Thos. M. Fish, *Gen. Supt*...........Ionia, Mich.
G. C. Watrous, *M. M. & C. B* ......Ionia, Mich.
Det., Mack. & Marq. R.R. 4-8½ g. 152 m. 16 lo. 1,112 c.
D. McCool, *Gen. Supt*... ......Marquette, Mich.
W. J. Tench, *Pur. Agt*........Marquette, Mich.
John B. Wilson, *Mech. Supt*....Marquette, Mich.
Dorchester & Delaware R.R. (*See Penna. (4) Del. Div.*)
Dubuque & Dakota R. R. 4-8½ g. 64 m. 2 lo. 54 cars.
A. C. Goodrich, *Supt*..............Hampton, Ia.
W. S. Couch, *Pur. Agt*....... .....Dubuque, Ia.
Duck River Valley R. R. (*See Nash., Chat. & St. L.*)
Dunkirk, Allegheny Valley & Pittsburgh R. R.
4-8½ g. 91 m. 14 lo. 102 cars.
D. Thayer, *Gen. Supt*............Dunkirk, N. Y.
R. C. Moore, *Pur. Agt*...... ..New York, N. Y.
J. C. Haggett, *M. M. & C. B*.....Dunkirk, N. Y.

E

East Alabama Ry. 5 g. 22 m. 3 lo. 19 cars.
W. W. Barnes, *Supt*...............Opelika, Ala.
East Broad Top R. R. 3 g. 30 m. 7 lo. 260 cars.
A. W. Sims, *Supt* ....Orbisonia, Pa.
A. W. Greenwood, *M. M*.... ....Orbisonia, Pa.
East St. Louis & Carondelet Ry. 4-9 g. 4 lo. 27 c.
Joseph Hill, *Gen. Supt*......East St. Louis, Ill.
East Tenn. & Western North Car. R. R.
3 g. 34 m. 3 lo. 73 cars.
Thomas E. Matson, *Supt*. .Elizabethton, Tenn.
East Tennessee, Virginia & Georgia R. R.
5 g. 1,453 m. 166 lo. 3,670 cars.
Henry Fink, *Rec* ....Knoxville, Tenn
C. H. Hudson, *Gen. Man*......Knoxville, Tenn.
J. F. O'Brien, *Asst. Gen. Man.* Knoxville, Tenn.
J. E. Wilcox, *Pur. Agt*. ......Knoxville, Tenn.
East Tenn. Div. and No. Car. and Ohio Branches.
F. K. Huger, *Supt*...........Knoxville, Tenn.
B. J. Sitton, *M. M*..... .....Knoxville, Tenn.
Jos. Armbruster, *M. C. B*....Knoxville, Tenn.
Alabama Div.: J. M. Bridges, *Supt*...Selma, Ala.
Simon Gay, *M. M*.. .. ..Selma, Ala.
W. W. Pierce, *M. C. B*. ....Selma, Ala.
Memphis & Charleston R. R. (Div.):
R. B. Pegram, Jr., *Supt*..... Memphis, Tenn
H. N. Burford, *M. M*... ....Memphis, Tenn.
Georgia Div.: J. W. Fry, *Supt*......Atlanta, Ga.
J. E. Mallory, *Ass't Supt*..... ....Macon, Ga.
W. A. Walden, *M. M*......... ....Atlanta, Ga.
J. H. Perkins, *M. C. B*. ....Atlanta, Ga.
East & West R. R. of Ala. 3 g. 110 m. 9 lo. 85 c.
John Postell, *Manager*.... .....Cedartown, Ga.
M. M. & C. B... Cedartown, Ga
Eastern R. R. 4-8½ g. 283 m. 110 lo. 2,268 cars.
Payson Tucker, *Gen. Man*........Boston, Mass.
D. W. Sanborn, *Mast. of Trans*..Boston, Mass.
G. F. Hurd, *Pur. Agt*....... . ..Boston, Mass.
Amos Pilsbury, *S. M. P. & M.*..E. Boston, Mass.
A. M. Waitt, *G. For. Car Dept*.... Salem, Mass.
Con'y Div.: J. W. Sanborn, *Supt.*, Wolfboro J., N.H.
Eastern Kentucky R. R. 4-8½ g. 34 m. 5 lo. 160 c.
H. W. Bates, *Man. & Pur. Agt*... Riverton, Ky.
H. W. Crawford, *M. M*..........Hunnewell, Ky.
Eastern (Maine) R. R. (*See Maine Central.*)
Eastern Shore R. R. 4-8½ g. 38 m. 3 lo. 9 c.
W. Thompson, *Supt*.... .....Princess Anne, Md.
F. Strattner, *M. M*......... Princess Anne, Md.
Elberton Air-Line R.R. (*See Rich. & Dan. N. G. Brs.*)
Elizabeth City & Norfolk R. R. (*See Norfolk So.*)
Elizabethtown, Lex. & Big Sandy R.R. (*See Ches. & O.*)
Elmira, Cortland & Northern R. R. 4-8½ g
A. A. McLeod, *Gen. Man*..........Elmira, N. Y.
Edw. Mahler, *Pur. Agt*........ Elmira, N.Y.
Thos. Kearsley, *M. M. & M. C. B.* Cortland, N.Y.
Emmitsburg R. R. (*See Western Md.*)
Erie & Huron Ry. 4-8½ g. 40m.
E. O. Bickford, *Gen Man*.........Toronto, Ont.
Erie & Pittsburg R. R. (*See Penna. Co.; (3) Div.*)
Etowah & Deaton's R. R. 3 g. 9 m.
D. M. Rogers, *Gen. Man*....... ...Etowah, Ga.
Eureka Springs Ry. 4-8½ g. 19 m. 1 lo. 9 cars.
Powell Clayton, *Gen. Man.* Eureka Springs, Ark.
Eureka & Palisade R. R. 3 g. 97 m. 7 lo. 125 cars.
B. Gilman, *Gen. Supt & Pur. Agt.*. Eureka, Nev.
J. M. Crawford, *M. M*............Palisade, Nev.
A. S. Longley, *M. C. B*...... ...Palisade, Nev.
European & North American R. R. (*See Maine Cen.*)
Evansville, Rockport & E'n Ry. 4-9 g. 71 m. 5 lo. 98 c
H. L. Shepard, *Supt*...........Evansville, Ind.
Evansv. & Terre Haute. 4-8½ g. 169 m. 26 lo. 973 c.
D. J. Mackey, *Gen. Supt*...... Evansville, Ind.
John Torrance, *M. M*.... ......Evansville, Ind.

F

Fitchburg R. R., 4-8½ g. 152 m. 100 lo. 3,566 cars.
John Adams, *Gen. Supt*.........Boston, Mass.
F. S. Pratt, *Pur. Agt* ....Boston, Mass.
Orlando Stewart, *Supt. M. P*...... Boston, Mass.
W. A. Foster, *Asst. Supt. M. P*..Fitchburg, Mass.
J. W. Marden, *M. C. B* .... Charlestown, Mass.
Flint & Pere Marq. 4-8½ g. 346 m. 78 lo. 2,664 cars.
H. C. Potter, *Gen. Man*..... E. Saginaw, Mich.
D. Edwards, *Asst. Gen. Man*..E. Saginaw, Mich
G. G. Cook, *Pur. Agt*.........E. Saginaw, Mich.
Sanford Keeler, *Gen. Supt*..E. Saginaw, Mich.
W. F. Potter, *Supt.* (E. Div.)..E. Saginaw, Mich.
M. V. Meredith, *Supt.* (W. Div.)E. Saginaw, Mich.
T. J. Hatswell, *M. M* ..... .E. Saginaw, Mich.
H. M. Perry, *M. C. B*..........E. Saginaw, Mich.
Florida Ry. & Nav. Co. 5 g. 488 m. 31 lo. 397 c.
D. E. Maxwell, *Gen. Supt*.... Fernandina, Fla.
R. V. Dohoney, *M. M. & C. B* Fernandina, Fla.
Florida Southern Ry. 3 g. 91 m. 6 lo. 96 cars.
Sherman Conant, *Gen. Man*... ...Palatka, Fla.
Jas. D. Hollister, *Supt*............Palatka, Fla.
St. J. & L. Eustis Div.:
W. J. Jarvis, *Supt*...... .....Ft. Mason, Fla.
Fonda, Johnst'n & Gloversv. 4-8½ g. 26 m. 5 lo. 35 c.
Lawton Caten, *Supt*.. ......Gloversville, N. Y.
G. V. Putman, *M. M*....... Gloversville, N. Y.
Fond du Lac, Amboy & Peoria. 3 g. 30 m. 2 lo. 35 c.
Alonzo Kinyon, *Supt. & P. A.* Fond du Lac, Wis.
Fort Dodge & Fort Ridley R. R. (*See Minn. & St. L.*)
Franklin & Prov. & Hopkinton. 22 m.
E. T. Logee, *Supt* .....Milford, Mass.
Ft. Madison & No.-West'n Ry. 3 g. 45 m. 4 lo. 121 c.
S. B. Kenrick, *Rec. & Pur. Agt.* Ft. Madison, Ia
I. L. Lamb, *M. M. & C. B*..... Ft. Madison, Ia.
Ft. Wayne, Cin. & Louisv. 4-8½ g. 128 m. 10 lo. 250 c.
White Water R. R. 4-8½ g. 65 m. 5 lo. 170 cars.
W. W. Worthington, *Gen. Supt*...Ft. Wayne, Ind.
T. H. Haberkorn, *M. M*.........Ft. Wayne, Ind.
Wm. Knight, *M. C. B*..........Ft. Wayne, Ind.
Ft. Worth & Denver City Ry. 4-8½ g. 114 m. 8 lo. 443 c.
C. L. Frost, *Gen. Supt* ......Fort Worth, Tex.
Freehold & New York Ry. 4-8½ g. 15 m. 4 lo. 40 c.
J. E. Ralph, *Supt. & Pur. Agt.* Freehold, N. J.
M. C. Mooney, *M. M*..... .... Freehold, N. J.
C. H. Snedeker, *M. C. B*...... Freehold, N. J.
Fulton County N. G. Ry. 3 g. 61 m. 4 lo. 168 cars.
A. C. Atherton, *Gen. Supt. & P. Agt.* Lewiston, Ill.

G

Gainesville & Dahlonega R. R. 3 g. 15 m.
W. P. Price, *Pres*..............Dahlonega, Ga.
Gainesville, Jefferson & Southern R.R. (*See Cen. of Ga*)
Gal., Harrisburg & San Antonio Ry. (*See Cen. Pac.*)
Galveston, Houston & Hend. R.R. (*See Mo. Pac. (5) Div.*)
Galveston, Sabine & St. Louis Ry.
4-8½ g. 28 m. 2 lo. 33 cars
Brad. Barner, *Gen. Man*.... ..Longview, Tex.
Chas. H. Jewell, *Gen. Supt*.....Longview, Tex.
Geneva, Ithaca & Sayre R. R. (*See Lehigh Val.*)
George's Creek & Cumberland R. R.
4-9 g. 25 m. 6 lo. 212 cars.
J. A. Millholland, *Gen. Man*..Cumberland, Md.
Georgetown & Lane's R. R. 5 g. 36 m. 2 lo. 52 c.
G. W. Earle, *Gen. Supt*......Georgetown, S. C
Georgia R. R. 5 g. 307 m. 42 lo. 1,048 cars.
John W. Green, *Gen. Man*..........Augusta, Ga.
John S. Cook, *M. M*..............Augusta, Ga.
T. M. Preval, *M. C. B*... ......Augusta, Ga.
Georgia Pacific Ry. 5 g. 218 m.
I. Y. Sage, *Gen. Supt*........Birmingham, Ala.
S. H. Purcell, *Div. Supt*.......Greenville, Miss.
G. H. Barnum, *Div. Supt*... ..Columbus, Miss.
Gettysburg & Harrisburg R. R. 4-9 g. 21 m.
W. H. Woodward, *Supt.* Pine Grove Furnace, Pa.
Grand Haven R. R. (*See Chic. & W. Mich.*)
Grand Junction Ry. (*See Midland of Can.*)
Grand Rapids, Indiana & Mackinaw. (*See Gr. R. & I.*)
G'd Rap., Newaygo & L. S. R. R. (*See Chic. & W. M.*)
Grand Rapids & Indiana. 4-9 g. 528 m. 56 lo. 2,083 c.
W. O. Hughart, *Gen. Man.* Grand Rapids, Mich.
W. R. Shelby, *Pur. Agt*....Grand Rapids, Mich.
S. D. Bradley, *M. M*...... Grand Rapids, Mich.
No'n Div.: J. M. Metheany, *Supt.* G'nd Rap., Mich.
So'n Div.: P. S. O'Rourke, *Supt.* Fort Wayne, Ind.
Grand Southern Ry. of New Brunswick.
4-8½ g. 82 m. 5 lo. 54 cars.
J. N. Greene, *Gen. Man*..... .St. George, N. B.
F. W. Holt, *Supt*............ St. George, N. B.
Thomas Logan, *M. M*...... .St. George, N. B.
Grand Tower & Carbondale. 4-8½ g. 25 m. 6 lo. 357 c.
J. C. Simpson, *Supt*.......... Carbondale, Ill.
Hugh Smith, *M. M*....... ....Murphysboro, Ill.
O. L. Garrison, *Pur. Agt* ...... St. Louis, Mo
Grand Trunk Ry. 4-8½ g. 2,332 m. 660 lo. 16,330 c.
Joseph Hickson, *Gen. Man*.... ...Montreal, Can.
Wm. Wainright, *Asst. Gen. Man.* Montreal, Can.
Jno. Taylor, *Gen. Storekeeper*...Montreal, Can.
Herbert Wallis, *Mech. Supt*.....Montreal, Can.
Wm. McWood, *Supt. Car Dept*. Montreal, Can.
J. Harkom, *Ass. Mech. Supt*..Richmond, P. Q.
A. H. Smith, *Ass. Mech. Supt*....Toronto, Ont.
R. Boaz, *Asst. Mech. Supt*. . .Stratford, Ont.
F. L. Wanklyn, *Loco. Works*...Montreal, Can.
Gt. West'n Div.: Chas. Stiff, *Supt.* Hamilton, Ont.
E. Baines, *Store Kpr*......... .London, Ont.
C. K. Domville, *Mech. Supt*.. .Hamilton, Ont.
E. Mavor, *Asst. Mch. Supt*... Hamilton, Ont.
J. D. McIlwain, *Asst. Car Dept*. .London, Ont.
Chi. & Gr. Trunk Ry. 4-8½ g. 339 m. 103 lo. 1,191 c.
W. J. Spicer, *Gen. Man*..... Detroit, Mich.
A. B. Atwater, *Supt*. ....Battle Creek, Mich.
J. F. Lorimer, *Storekeeper*.....Detroit, Mich.
H. Roberts, *Mech. Supt*........Detroit, Mich.
Midland of Can. 4-8½ g. 471 m. 44 lo. 1,423 c.
W. B. Ferguson, *Supt* ......Peterboro, Ont.
J. D. Barnet, *Mech. Supt*... Port Hope, Ont.
Det., Gr. H. & Mil. Ry. 4-8½ g. 189 m. 39 lo. 696 c.
W. J. Spicer, *Gen. Man*... ....Detroit, Mich.
John S. Lorimer, *Storekeeper*....Detroit, Mich.
W. J. Morgan, *Supt*................Detroit, Mich.
H. Roberts, *Mech. Supt*......Port Huron, Mich.
Green Bay, Winona & St. Paul R. R.
4-8½ g. 250 m. 19 lo. 623 cars.
Timothy Case, *Gen. Man. & P. A.* Green Bay, Wis.
A. Fenwick, *M. M*......... ... Ft. Howard, Wis.
Green Cove Spring & Melrose R.R. 3 g. 32 m. 1 lo. 11 c.
S. Ackley, *Pres*..... ....Philadelphia, Pa.
Greenwood, Laurens & Spart'g. 5 g. 4 lo.
J. N. Bass, *Supt* .... .Augusta, Ga.
T. F. Warwick, *M. M. & M. C. B*. Augusta, Ga.
Greenwich & Johnsonville Ry. 4-8½ g. 15 m. 1 lo. 7 c.
J. H. Thompson, *Supt* .. ..Greenwich, N. Y.
Gulf, Col. & Santa Fé Ry. 4-8½ g. 536 m. 51 lo. 1,400 c.
Webster Snyder, *Gen. Man*. .Galveston, Texas.
Jno. W. Thorne, *Pur. Agt*....Galveston, Texas.
W. H. Reilly, *M. M. & M. C. B.* Galveston, Texas.
Gulf, W'n Texas & Pac. Ry. 4-8½ g. 68 m. 6 lo. 74 c.
M. D. Monserrate, *Supt. & Pur. Agt.* Cuero, Tex.
James Mooney, *M. M*...... .. Cuero, Texas.

H

Hannibal & St. Jo. R. R. 4-8½ g. 292 m. 76 lo. 1,906 c.
J. F. Barnard, *Gen. Man* ...... St. Joseph, Mo.
S. E. Crance, *Gen. Supt* ... .Hannibal, Mo.
Wm. Irving, *Pur. Agt*... .... Chicago, Ill
N. J. Paradise, *Supt. M. M*.... ....Hannibal, Mo.
Chas. Coller, *For. Car Dept*. ....Hannibal, Mo.
Hanover Branch R. R. 4-8½ g. 8 m. 2 lo. 18 cars.
E. Y. Perry, *Supt*........South Hanover, Mass.
Hanover Junction, Hanover & Gettysburg R. R.
4-8½ g. 74 m. 10 lo. 140 cars.
H. D. Scott, *Gen. Supt*.........Gettysburg, Pa.
John J. Bingley, *M. M*...........Hanover, Pa.
Jas. Harthorn, *M. C. B*... ....Hanover, Pa.
Harrisburg & Potomac R. R. 4-8½ g. 41 m. 3 lo. 45 c.
R. H. Middleton, *Supt*......Boiling Springs, Pa.
Hartford & Conn. Val. R. R. 4-8½ g. 47 m. 9 lo. 196 c.
O. M. Shepard, *Supt*.... .... New Haven, Ct.
John Henry, Jr., *Supt. M. P* . Hartford, Conn.
Hartford & Conn. W'n R. R. 4-8½ g. 110 m. 16 lo. 495 c.
John F. Jones, *Supt*....... ... . .Hartford, Ct.
J. C. Barton, *M. M*...................Hartford, Ct.
Hartwell R. R. (*See Rich. & Dan.; N. G. Brs.*)
Hecla & Torch Lake R. R. 4-1 g. 5 m. 5 lo. 165 cars.
W. A. Childs, *Gen. Man*.........Calumet, Mich.
Herkimer, Newport & Poland Ry.
3-6 g. 17 m. 2 lo. 24 cars.
Albert Wilber, *Supt*...........Herkimer, N. Y.
Hobart & Manistee River R. R. 3 g. 9 m. 2 lo. 42 c.
H. W. Marsh, *Supt*. ....Hobart, Mich.
Hot Springs R. R. 3 g. 25 m. 3 lo. 39 cars.
J. N. Conger, *Supt*... ....Hot Springs, Ark.
L. Finlay, *M. M*..... .... Malvern, Ark.
Housatonic R. R. 4-8½ g. 126 m. 23 lo. 879 cars.
W. H. Yeomans, *Supt*.. ....Bridgeport, Ct.
D. S. Draper, *Pur. Agt*..........Bridgeport, Ct.
N. Slingland, *M. M*...... .....Falls Village, Ct.
J. J. Ferris, *M. C. B*........ ...Falls Village, Ct.
Houston Belt Ry. 4-8½ and 3 gauge 16 miles.
S. L. Werden, *V. P. & Gen. Man.* Houston, Tex
Houston, East & West Tex. Ry. 3 g. 150 m. 10 lo. 570 c.
Paul Bremond, *Pr. & Pur. Agt*..Houston, Tex.
E. L. Bremond, *Gen. Man*........Houston, Tex.
Ed. Campbell, *M. M*............ Houston, Tex.
C. F. Schelewa, *M. C. B*. ..... Houston, Texas.
Houston & Tex. Cen. Ry. 4-8½ g. 750 m. 78 lo. 2,526 c.
J. Waldo, *V. Pr. & Gen. Man*.... Houston, Tex.
A. H. Swanson, *Gen. Tr. Man*.....Houston, Tex.
L. C. Noble, *Gen. M. M*...........Houston, Tex.
James McGee, *M. C. B*.. ....Houston, Tex.
So. & Wn. Divs.: M. G. Howe, *Supt.* Houston, Tex.
No. & Mi. Divs.: G. A. Quinlan, *Supt.*, and
C. H. Burns, *Asst. M. M*......Corsicana, Tex.
No.-Wn. Div.: Donald Allen, *Supt*.... Waco, Tex.
Humeston & Shenandoah R. R.
4-8½ g. 113 m. 18 lo. 80 cars.
F. O. Wyatt, *Gen. Man*............Clarinda, Ia.
E. C. Murphy, *Supt*........ ....Clarinda, Ia.
M. B. Snyder, *M. M* ....Shenandoah, Ia.
Huntingdon & Br. Top Mt. 4-8½ g. 65 m. 18 lo. 318 c.
Geo. F. Gage, *Gen. Man*. .. .Huntingdon, Pa.
Samuel B. Knight, *Pur. Agt*..Philadelphia, Pa.
William Barkla, *M. M*...... ......Saxton, Pa.

I

Illinois Central R. R. 4-8½ g. 1,928 m. 334 lo. 8,565 c.
E. T. Jeffery, *Gen. Supt* .... .Chicago, Ill
O. Ott, *Pur. Agt*...... ....Chicago, Ill
Henry Schlacks, *Supt. of Mach*....Chicago, Ill.
W. B. Snow, *M. M. Car Works*.....Chicago, Ill
(1) Ill. & Ia. Divs.: C. A. Beck, *Supt*.....Chicago, Ill.
Chic. Div.: T. J. Hudson, *Supt* . ... Cairo, Ill
Wm. Renshaw, *M. M* ....Chicago, Ill.
Mid. Div.: H. L. Frisbie, *Supt*.. .... .Pontiac, Ill.
Spring. Div.: W. Wilkinson, *Supt.* Springfield, Ill.
Wm. Griffin, *M. M*.. . . . . .Clinton, Ill.
No'n Div.: J. C. Jacobs, *Supt*..........Amboy, Ill.
J. B. Edams, *M. M*.............. ...Amboy, Ill.
Ia. Div.: M. Gilleas, *Supt*....... ... Dubuque, Ia.
Thos. W. Place, *M. M*......... .Waterloo, Ia.
(2) So. Divs.: C. M. Sheafe, *Supt*....New Orleans, La.
La. Div.: J. M. Turner, *Supt.* McComb City, Miss.
W. B. McKenna, *M. M*... McComb City, Miss.
Miss. Div.: J. G. Mann, *Supt*......Jackson, Tenn.
J. F. White, *M. M*........ Water Valley, Miss.
Illinois Midland Ry. 4-8½ g. 176 m. 12 lo. 611 cars.
D. H. Conklin, *Rec. & Gen. Man*......Decatur, Ill.
O. E. Grady, *Train Mast*...........Decatur, Ill.
Frank Young, *For. Shops*.............Paris, Ill.
Illinois & St. Louis R. R. 4-8½ g. 19 m. 10 lo. 450 c
C. H. Sharman, *Gen. Supt. & P. A.* St. Louis, Mo
D. J. Timlin, *M. M*... ....Belleville, Ill.
Charles Rothe, *M. C. B*..... .. E. St. Louis, Ill
Indiana, Bloomington & Western Ry.
4-8½ g. 826 m. 108 lo. 4,018 cars.
C. E. Henderson, *Gen. Man*. Indianapolis, Ind.
I. H. Wilson, *Gen. Supt* .....Indianapolis, Ind.
H. C. Norton, *Pur. Agt*...... Indianapolis, Ind.
Jos. S. Porter, *Div. M. M*......... Sandusky, O.
B. Warren, *Gen. M. M*........Indianapolis, Ind.
M. Fogarty, *Div. M. M* ....Urbana, Ill.
W. B. Warren, *Div. M. M* .... Indianapolis, Ind.
Indiana, Illinois & Iowa R.R. 4-8½ g. 104 m. 5 lo. 83 c.
F. M. Drake, *Pres*....... ....Kankakee, Ill.
T. P. Shonts, *Gen. Supt*......... Kankakee, Ill.
R. C. Ackley, *M. M*................ Kankakee, Ill.
Indiana & Illinois Southern Ry. 3 g. 91 m. 3 lo. 69 c.
W. C. Lyon, *Gen. Man. & P. Agt.* Robinson, Ill.
J. S. Pickering, *M. M. & C. B*.. Effingham, Ill.
Indianapolis, Decatur & Springfield Ry.
Geo. Bender, *Supt*... .... ..Indianapolis, Ind.
M. M.... ......Indianapolis, Ind
Indianapolis & Evansville Ry. 4-8½ g. 54 m.
D. J. Mackey, *Supt*.. .... .Evansville, Ind.
Indianapolis & St. Louis R. R. (*See C., C., C. & I.*)
Indianapo. & Vincennes R.R. (*See Penna. Co.; (8) Div.*)
Intercolonial Ry. 4-8½ g. 873 m. 163 lo. 4,589 cars.
David Pottinger, *Chief Supt*.....Moncton, N. B.
T. V. Cook, *Gen. Storekeeper*...Moncton, N. B.
H. A. Whitney, *Mech. Supt*......Moncton, N. B
Ewd. D. Shaffer, *M. C. B* ....Moncton, N. B.
M. & C. Dist.: J. E. Price, *Supt.* Campbellton, N. B.
Hal. & St. J. Div.: J. J. Wallace, *Supt*..Truro, N. F
Q. & St. F. Div.: A. R. McDonald, *Supt.* Riv. du Lp. Q.
International Ry. 4-8½ g. 69 m. 7 lo. 12 cars.
D. E. McFee, *Supt* ....Sherbrooke, Que
J. Ruelle, *M. M*.................Sherbrooke, Que.
W. Charest, *M. C. B*.........Sherbrooke, Que.
International & Gt. N'n R. R. (*See Mo. Pac.; (5) Div.*)
Iowa Falls & Sioux City R. R. (*See Ill. Cen.*)
Iron Ry. (*See Tol., Cin. & St. L.*)
Iron Mountain & Helena R. R. (*See Mo. Pac.; (4) Div.*)
Ithaca Auburn & Western Ry. (*See Southern Cen.*)

J

Jacksonville So.-E'n R. R. 4-8½ g. 54 m. 5 lo. 69 c.
E. S. Greenleaf, *Supt*..........Jacksonville, Ill.
Ira F. Petrie, *M. M*.............Jacksonville, Ill.
Jacksonville, St. Augustine & Halifax River Ry.
3 g. 76 m. 3 lo. 27 cars
W. L. Crawford, *Gen. Man*..Jacksonville, Fla.
E. T. Silvius, *M. M* ....Jacksonville, Fla.
Jacksonv., Pensacola & Mob. (*See Fla. Cent. & W.*)
Jacksonville, Tampa & Key West Ry. 5 g. 56 m.
G. W. Bentley, *Gen. Man*. ..Jacksonville, Fla.
M. R. Moran, *Supt*..............Jacksonville, Fla.
F. B. Hurlbut, *M. C. B*..... Jacksonville, Fla.
Jamesville & Washington R. R. (*See Norfolk So'n.*)
Jeffersonv'l, Madison & Indpls. R. R. (*See (9) Pa. Co.*)
Jersey City & Albany R. R. 4-8½ g. 38 m.
J. W. McCulloh, *Manager* ...Jersey City, N. J.
Jersey City & Bergen R. R. 4-10 g. 21 m. 2 lo. 13 c.
T. M. Sayre, *Supt*..............Jersey City, N. J.
Jersey Shore, Pine Creek & Buff. Ry. (*See Phil. & R.*)
Junction & Breakwater R.R. (*See Del., Md. & Va.*)

K

Kaaterskill R. R. 3 g. 8 m.
J. H. Jones, *Supt*..... ....Rondout, N. Y.

Kankakee & Seneca R.R. (See Cin., Ind., St. L. & Chi.
Kansas Central R. R. (See Union Pacific.
Kansas City, Fort Scott & Gulf R. R.
4-8½ g. 389 m. 75 l. 2,037 c.
Geo. H. Nettleton, Gen. Man. .... Kansas City, Mo.
L. W. Towne, Supt .... Kansas City, Mo.
H. P. Jacques, Pur. Agt .... Kansas City, Mo.
J. S. McCrum, M. M .... Kansas City, Mo.
A. N. Montier, M. C. B .... Kansas City, Mo.
Kansas Cy, Lawrence & So. Kan. (See At., Top. & S. F.)
Kansas City, Springfield & Memphis R. R.
4-8½ g. 283 m. 10 lo. 456 cars.
George H. Nettleton, Pres .... Kansas City, Mo.
L. W. Towne, Supt .... Kansas City, Mo.
H. P. Jacques, Pur. Agt .... Kansas City, Mo.
J. S. McCrum, M. M .... Kansas City, Mo.
A. N. Montier, M. C. B .... Kansas City, Mo.
Kansas City, St. Joseph & Council Bluffs; and St. Jo. & Des Moines R. Rs. 4-8½ & 3 g. 368 m. 41 lo. 1,148 c.
J. F. Barnard, Gen. Man .... St. Joseph, Mo.
J. R. Hardy, Supt .... St. Joseph, Mo.
D. H. Winton, Asst. Supt .... St. Joseph, Mo.
A. B. Barnard, Asst. Supt .... Kansas City, Mo.
Wm. Irving, Pur. Agt .... Chicago, Ill.
F. A. Chase, M. M .... St. Joseph, Mo.
Thos. Aylesbury, F. For. Car. Dep. St. Joseph, Mo.
Kansas City & Southern Ry. 4-8½ g. In progress.
Wm. Bailey, Pres .... Kansas City, Mo.
Kansas Coal Belt R. R. 4-8½ g. In progress.
C. H. Malin, Gen. Man .... Girard, Kan.
F. A. Hill, Supt .... Girard, Kan.
Kansas & Gulf Short Line R. R. 33 m. 2 lo. 32 cars.
Eli Culverhouse, Gen. Man .... Tyler, Tex.
V. K. Stevenson, Pur. Agt .... New York, N. Y.
Kendall & Eldred R. R. (See Buf., N. Y. & Phil.)
Kent Northern Ry. 4-8½ g. 27 m. 2 lo. 16 cars.
J. C. Brown, Gen. Man .... Richibucto, N. B.
Kentucky Central R. R. 4-9 g. 255 m. 28 lo. 640 cars.
H. E. Huntington, Supt .... Covington, Ky.
W. T. Smith, M. of Mach .... Covington, Ky.
Kentucky & South Atlantic Ry. 3 g. 23 m. 3 lo. 52 c.
Geo. B. Harper, Supt. & P. A .... Mt. Sterling, Ky.
Geo. W. Lewis, M. M .... Mt. Sterling, Ky.
Keokuk & Des Moines R.R. (See Chi., R. I. & Pac.)
Kinzua R. R. (See Buf., N. Y. & Phil.)
Kingston & Pembroke Ry. 4-8½ g. 104 m. 9 lo. 214 c.
B. W. Folger, Supt .... Kingston, Ont.
J. H. Taylor, Pur. Agt .... Kingston, Ont.
J. H. Taylor, M. M .... Kingston, Ont.
Knox & Lincoln R. R. 4-8½ g. 49 m. 6 lo. 119 cars.
C. A. Coombs, Supt .... Bath, Me.
Wm. A. Field, M. M .... Bath, Me.
C. L. Turner, M. C. B .... Bath, Me.
Knoxville & Augusta R. R. 5 g. 16 m. 2 lo. 34 cars.
R. N. Hood, Gen. Man. & P. Agt. Knoxville, Tenn.
J. M. Hood, Supt .... Knoxville, Tenn.

L

Lackawanna & Pittsburgh R. R. 3 g. 97 m.
Geo. W. Chapman, Rec .... Angelica, N. Y.
Lake Champlain & Moriah R.R. 4-8½ g. 8 m. 8 lo. 222c.
E. B. Hedding, Supt .... Port Henry, N. Y.
Lake Erie & Western Ry. 4-8½ g. 388 m. 53 lo. 1,701 c.
J. H. Cheney, Gen. Man .... Bloomington, Ill.
D. S. Hill, Gen. Supt .... Bloomington, Ill.
T. H. Perry, Pur. Agt .... Bloomington, Ill.
H. L. Cooper, Supt. of Equipment .... Lima, O.
Lake George & Muskegon River R. R.
4-8½ g. 20 m. 4 lo. 79 cars.
W. S. Gerrish, Gen. Man .... Muskegon, Mich.
Lake Shore & Michigan So'n Ry.
4-8½ g. 1,340 m. 547 lo. 17,115 cars.
John Newell, Pres .... Cleveland, O.
P. P. Wright, Gen. Supt .... Cleveland, O.
L. G. Higgins, Pur. Agt .... Cleveland, O.
G. W. Stevens, Supt. M. P .... Cleveland, O.
John Kirby, Gen. M. C. B .... Cleveland, O.
East'n Div.: C. B. Couch, Supt .... Cleveland, O.
J. S. Graham, M. M .... Buffalo, N. Y.
A. C. Robson, M. C. B .... Buffalo, N. Y.
L. O. Gassett, M. M .... Cleveland, O.
J. Withycombe, M. C. B .... Cleveland, O.
Frank. Div.: G. H. McIntire, Supt. Youngstown, O.
Toledo Div.: Thos. Flesher, Jr., Supt. Cleveland, O.
J. M. Sanborn, M. M .... Norwalk, O.
W. O. Smith, M. C. B .... Norwalk, O.
Mich. Divs.: J. E. Curtis, Supt .... Toledo, O.
Det. Brs.: T. J. Charlesworth, Supt. Detroit, Mich.
Lansing, Ypsilanti & Ft. Wayne Branches.
W. H. Caniff, Supt .... Hillsdale, Mich.
Western Div.: A. G. Amsden, Supt .... Chicago, Ill.
W. L. Gilmore, M. M .... Elkhart, Ind.
Frank O. Bray, M. C. B .... Adrian, Mich.
Gr. Rap. Br.: M. E. Wattles, Supt. Kalamazoo, Mich.
Lake Tahoe R. R. 3 g. 10 m. 3 lo. 49 cars.
D. L. Bliss, Gen. Man .... Carson, Nev.
John T. Rogers, Gen. Supt .... Carson, Nev.
Tho. Morris, M. M .... Carson, Nev.
Leavenworth, Topeka & So. W'n Ry. (See A. T. & S. F.)
Lebanon Springs R. R. 4-8½ g. 58 m. 5 lo. 44 c.
W. C. Alstyne, Gen. Man .... Albany, N. Y.
W. H. Hawkins, Pur. Agt .... Albany, N. Y.
Geo. Tefft, M. M .... Chatham, N. Y.
Lehigh Valley R. R. 4-8½ g. 495 m. 392 lo. 36,908 c.
H. S. Goodwin, Gen. Supt .... Bethlehem, Pa.
W. C. Alderson, Pur. Agt .... Philadelphia, Pa.
John I. Kinsey, M. M .... So. Easton, Pa.
John S. Lentz, M. C. B .... Packerton, Pa.
N. J. Div.: Jas. Donnelly, Supt. Perth Amboy, N. J.
Coal Rds.: J. I. Blakeslee, Supt. Mauch Chunk, Pa.
D. Clark, M. M .... Hazleton, Pa.
John Campbell, M. M .... Delano, Pa.
B. M. Div.: A. G. Brodhead, S. .... Mauch Chunk, Pa.
P. Hofecker, M. M .... Weatherly, Pa.
Wy. Div.: A. Mitchell, S. & M. M. Wilkesbarre, Pa.
Pa. & N. Y.; and Geneva, Ithaca & Sayre R. Rs.
Wm. Stevenson, Gen. Supt .... Sayre, Pa.
J. N. Weaver, M. M .... Sayre, Pa.
Jno. S. Lentz, M. C. B .... Packerton, Pa.
Lehigh & Hudson River Ry. 4-8½ g. 63 m. 8 lo. 350 c.
Grinnell Burt, Gen. Man .... Warwick, N. Y.
N. L. Furman, Supt .... Warwick, N. Y.
John Sayre, Pur. Agt .... Warwick, N. Y.
S. Mills, M. M .... Warwick, N. Y.
Lehigh & Lackawanna and Lehigh & Susquehanna R. Rs. (See Phil. & Read.; N. J. Cen. Div.)
Levis & Kennebec R. R. (See Quebec Cen.)
Litchfield, Carrollton & Western R. R. 4-8½ g. 22 m.
H. S. Carroll, Prest. & G. Man. Carrollton, Ill.
Ligonier Valley R. R. 4-9 g. 11 m. 2 lo. 22 cars.
Thos. A. Mellon, Gen. Manager .... Pittsburg, Pa.
Geo. Senft, Supt. & P. Agt .... Latrobe, Pa.
Little Miami R. R. (See Penna. Co.'s Rds.; (8) Div.)
Little Rock, Miss. River & Texas Ry.
4-8½ g. 170 m. 12 lo. 299 cars.
H. Wood, Gen. Man .... Little Rock, Ark.
F. A. Lister, Gen. Supt .... Little Rock, Ark.
F. Hufsmith, M. M. & C. B .... Argenta, Ark.
Little Rock & Fort Smith. 4-8½ g. 170 m. 13 lo. 360 c.
Hv. Wood, Gen. Man .... Little Rock, Ark.
F. A. Lister, Supt .... Little Rock, Ark.
F. Hufsmith, M. M. & M. C. B .... Argenta, Ark.
Little Saw Mill Run R. R. 3 & 4-8½ g. 8 m. 4 lo. 327 c.
T. Hartley, Gen. Man .... Banksville, Pa.
Long Island R. R. 4-8½ g. 352 m. 92 lo. 953 cars.
I. D. Barton, Gen. Supt. Long Island City, N. Y.
Benj. Norton, Pur. Agt. Long Island City, N. Y.
C. A. Thompson, M. M. Long Island City, N. Y.
Longview & Sabine Valley R. R. (See Gal. Sab. & St. L.)
Louisiana W'n R. R. (See Cen. Pac.; G., H. & S. A. Div.)
Louisville, Cin. & Lexington R. R. (See Louis. & N.)
Louis., Evans. & St. L. Ry. 4-8½ g. 254 m. 24 lo. 1,032c.
Geo. F. Evans, Rec .... Louisville, Ky.
R. S. Minor, Gen. Supt .... Louisville, Ky.
F. P. Boatman, M. M .... Evansville, Ind.
Louisville, New Albany & Chicago Ry.
4-8½ g. 479 miles 60 lo. 3,700 cars.
John B. Carson, Gen. Man .... Chicago, Ill.
W. R. Woodard, Gen. Supt .... Chicago, Ill.
H. O. Nourse, Pur. Agt .... Chicago, Ill.
Josiah Bettis, M. M. & C. B .... New Albany, Ind.
C. C. F. Bent, Supt. Trans .... Lafayette, Ind.
Louisville, New Orleans & Tex. Ry. 455 m. In progress.
Jas. M. Edwards, Gen. Man .... Memphis, Tenn.
E. D. Anderson, M. M .... Memphis, Tenn.
J. J. Casey, M. C. B .... Vicksburg, Miss.
John Bradley, Div. Supt .... New Orleans, La.
C. J. Birdsong, Div. Supt .... Memphis, Tenn.
Louisville & Nashville R. R.
5 g. 2,186 m. 380 lo. 12,197 cars.
Reuben Wells, Gen. Man .... Louisville, Ky.
J. T. Harahan, Asst. Gen. M .... Louisville, Ky.
Geo. F. Evans, Supt .... Louisville, Ky.
P. P. Huston, Pur. Agt .... Louisville, Ky.
Harvey Middleton, Supt. Mach .... Louisville, Ky.
Louisv., Cin. & Lex. Divs.:
J. G. Metcalf, Supt. Trans .... Louisville, Ky.
P. Leeds, M. M .... Louisville, Ky.
J. W. Luttrell, M. M .... Louisville, Ky.
J. G. Clifford, M. M. (2d & C. Div.) Bowling Grn. Ky.
Henderson Div.: J. Geddes, Supt. Henderson, Ky.
W. F. Pike, M. M .... Nashville, Tenn.
Nash. & D. Div.: J. Geddes, Supt. Nashville, Tenn.
Elkton & Guthrie:
J. Geddes, Supt .... Nashville, Tenn.
S. & N. A. Div.: Levi Hedge, Supt. Birmingham, Ala.
C. W. White, M. M .... Birmingham, Ala.
Mob. & M.; N. Div. Pens. & Sel.; Sl. & Mont. R. Rs.:
B. C. Epperson, Supt .... Montgomery, Ala.
J. N. Hall, M. M. (Mont. Shops) Montgomery, Ala.
N. O. Div.: O. M. Dunn, Supt .... New Orleans, La.
Wm. Adair, M. M .... Mobile, Ala.
Memp. Div.: W. Colcamp, Supt. Memphis, Tenn.
J. V. Slusser, M. M .... Memphis, Tenn.
St. L. Div.: C. O. Parker, Supt. Montgomery, Ala.
Thos. Walsh, M. M .... Mt. Vernon, Ill.
Pensacola and So. Div. Pens. & Selma and P. & A. Rds.:
E. O. Saltmarsh, Supt .... Pensacola, Fla.
W. D. Robb, M. M .... Pensacola, Fla.
Louisville & Wadley R. R. 5 g. 10 m. 1 lo. 5 c.
J. H. Wilkins, Supt. & Pur. Agt. Louisville, Ga.

M

Macon & Brunswick R. R.
(See E. Tenn., Vir. & Ga.; At. & Ga. Divs.)
Maine Central R. R. 4-8½ g. 525 m. 82 lo. 2,168 c.
Payson Tucker, Gen. Man .... Portland, Me.
Amos Pillsbury, M. M .... Waterville, Me.
C. H. Kenison, M. C. B .... Augusta, Me.
Eastern Maine. 3 g. 19 m. 2 lo. 40 c.
L. L. Lincoln, Supt .... Portland, Me.
Manchester & Keene R.R. 4-8½ g. 30 m. (See Concord.)
Manchester & Lawrence R. R. (See Concord.)
Manchester & North Weare R. R. (See Concord.)
Manhattan Ry. 4-8½ g. 32 m. 228 lo. 652 pass. c.
Frank K. Hain, Gen. Man .... New York, N. Y.
W. T. Goundie, Supt. Trans .... New York, N. Y.
T. W. Peeples, M. M .... New York, N. Y.
H. A. Webster, M. C. B .... New York, N. Y.
Manhattan, Alma & Burlingame Ry. (See A., T. & S. F.)
Manitoba Southwestern Colonization Ry.
4-8½ g. 52 m. 3 lo. 125 cars.
J. M. Eagan, V. Pres .... Winnipeg, Man.
W. T. Reed, M. M .... Winnipeg, Man.
Marietta & Cincinnati R. R. (See Cin. Wash. & Balt.)
Marietta & North Georgia R. R. 3 g. 70 m. 4 lo. 45 c.
J. B. Glover, Supt .... Marietta, Ga.
W. R. Power, Pur. Agt .... Marietta, Ga.
C. Chester, M. M .... Marietta, Ga.
Marquette, Houghton & Ontonagon R. R.
4-8½ g. 100 m. 42 lo. 2,530 cars.
John Hornby, Gen. Man .... Marquette, Mich.
W. A. Thompson, Ass't Supt. Marquette, Mich.
M. B. McGee, Pur. Agt .... Marquette, Mich.
W. A. Mahan, M. M .... Marquette, Mich.
H. D. Lyons, M. C. B .... Marquette, Mich.
Maryland Central R. R. 3 g. 27 m. 4 lo. 56 cars.
S. G. Boyd, Supt .... Baltimore, Md.
Marquette & Western. 4-8½ g. 25 m. 10 l. 500 c.
D. McCool, Gen. Supt .... Marquette, Mich.
W. J. Tench, Pur. Agt .... Marquette, Mich.
J. B. Wilson, Mech. Supt .... Marquette, Mich.
Massachusetts Central R. R. 4-8½ g. 48 m. 5 l. 81 c.
E. G. Allen, Supt. & Pur. Agt .... Boston, Mass.
E. A. Walker, M. M .... So. Sudbury, Mass.
McComb, Deshler & Toledo R. R.
(See Cin., Ham. & Day.; D. & M. Div.)
Meadville Ry. (See Penna. Co.'s Rds.; (2) Div.)
Memphis & Charleston R. R. (See E. Tenn. Va. & Ga.)
Memphis & Lit. Rock R. R. 5 g. 135 m. 14 lo. 299 c.
R. Fink, G. Man. & P. A .... Little Rock, Ark.
H. G. Fleming, Supt .... Memphis, Tenn.
Thos. Rennell, M. M .... Argenta, Ark.
T. Rennell, M. C. B .... Argenta, Ark.
Mexican Ry. 4-8½ g. 293 m. 42 lo. 616 cars.
E. W. Jackson, Gen. Man .... Mexico, Mex.
Mexican Central Ry. 4-8½ g. 1,224 m. 94 lo. 2,609 c.
Theo. Nickerson, Pur. Agt .... Boston, Mass.
D. B. Robinson, Gen. Man .... El Paso del Norte.
D. MacKenzie, Gen. Supt .... City of Mexico.
F. W. Johnstone, Supt. M. P. & M. City of Mexico.
J. H. O'Brien, M. M .... City of Mexico.
G. T. Jarvis, Div. Supt .... City of Mexico.
A. Smith, Div. Supt .... Silao, Mex.
Wm. Davis, Div. Supt .... Jimulco, Mex.
R. E. Comfort, Div. Supt. Paso del Norte, Mex.
R. S. Simpson, M. M .... City of Mexico.
A. Hendee, M. M .... Calera, Mex.
C. F. Stewart, M. M .... Silao, Mex.
W. L. Wallace, M. M .... Jimulco, Mex.
J. G. McCuen, M. M .... Chihuahua, Mex.
Tampico Div: E. A. Whorf, Supt. Tampico, Mex.
San Blas Div.: C. E. Payne, Supt. San Blas, Mex.
Mexican National Ry. 3 g. 766 m. 50 lo. 1,283 c.
Northern General Division:
C. A. Merriam, Gen. Supt .... Laredo, Tex.
F. W. Baldwin, Asst. Gen. Supt .... Laredo, Tex.
John Grace, M. M .... Laredo, Tex.
T. Milan, M. M .... Corpus Christi, Tex.
Metamoras, Div.:
W. W. Mayberry, Asst. Supt .... Brownsville, Tex.
Galveston Div.:
T. E. Quinn, Asst. Supt .... Galveston, Tex.
Southern General Division:
W. E. Lewis, Supt .... Mexico, Mex.
R. C. Peebles, Asst. Supt .... Mexico, Mex.
J. M. Winslow, M. M .... Mexico, Mex.
Zacatecas Div.:
C. Langrand, Manager .... Zacatecas, Mex.
Michigan Cen. R. R. 4-8½ g. 1,485 m. 357 lo. 11,284 c.
H. B. Ledyard, Pres. & Gen. Man. Detroit, Mich.
E. C. Brown, Gen. Supt .... Detroit, Mich.
Robert Miller, Asst. Gen. Supt .... Detroit, Mich.
Allan Bourn, Pur. Agt .... Detroit, Mich.
C. E. Smart, Gen. M. M .... Jackson, Mich.
(1) Lines West of Detroit River:
E. C. Brown, Gen. Supt .... Detroit, Mich.
East. Div.: D. S. Sutherland, Supt. Detroit, Mich.
Bay City, Saginaw & Mackinaw Divisions.:
W. A. Vaughan, Supt .... Bay City, Mich.
C. E. Smart, M. M .... Bay City, Mich.
Main Line: Gr. Rap.; So. Bend; and So. Hav. Divs.:
C. B. Bush, Supt .... Jackson, Mich.
W'n Divs.: R. H. L'Hommedieu, Supt. Chicago, Ill.
(2) Lines East of Detroit River:
J. B. Morford, Supt .... St. Thomas, Ont.
A. F. Bull, M. M .... St. Thomas, Ont.
Rob't Potts, M. C. B .... St. Thomas, Ont.
Michigan & Ohio.
L. A. Latcha, Gen. Man .... Toledo, O.
W. L. Webb, Pur. Agt .... Toledo, O.
D. J. Durrell, M. M .... Marshall, Mich.
Middleburg & Schoharie; and Schoharie Valley R. Rs. 4-8½ g. 11 m. 2 lo. 6 cars.
P. S. Danforth, Gen. Supt .... Middleburg, N. Y.
Midland of Canada. (See Grand Trunk.)
Midland No. Carolina Ry. 5 g. 95 m. 9 lo. 82 cars.
Atlantic & North Carolina Ry. 22 m.
John D. Whitford, Gen. Man .... Newbern, N. C.
J. A. Bryan, Supt .... Newbern, N. C.
D. J. Sprague, Pur. Agt .... New York, N. Y.
B. Manly, Supt. of Mach .... Newbern, N. C.
Milford & Woonsocket.
W. W. Jencks, Supt .... Milford, Mass.
Milton & Sutherlin. (Oper. by Rich. & Danville.)
Milwaukee, Lake Shore & Western Ry.
4-8½ g. 370 m. 45 lo. 1,536 cars.
H. G. H. Reed, Gen. Supt .... Milwaukee, Wis.
J. Donahue, Supt .... Milwaukee, Wis.
John Hickey, M. M .... Ledyard, Wis.
Milwaukee & Northern and Wisconsin & Michigan R. Rds. 4-8½ g. 228 m. 24 l. 703 cars.
C. F. Dutton, Gen. Supt .... Milwaukee, Wis.
N. S. Kimball, M. M .... Ft. Howard, Wis.
Mineral Range R. R. 3 g. 13 m. 4 lo. 43 cars.
Chas. E. Holland, Pr. & Supt .... Hancock, Mich.
W. H. Carr, Pur. Agt .... Hancock, Mich.
T. J. Shellhorn, M. M. & C. B .... Hancock, Mich.
Minneapolis, Lyndale & Minnetonka Ry.
3 g. 25 miles 4 motors 1 lo. 35 cars.
William McCrory, Man .... Minneapolis, Minn.
T. W. Heintzelman, M. M .... Minneapolis, Minn.
Minneapolis, S. Ste. Marie & Atlantic Ry.
4-8½ g. 45 m.
W. W. Rich, Supt .... Minneapolis, Minn.
Minneapolis & St. Louis Ry.
4-8½ g. 500 m. 72 lo. 2,060 c.
W. H. Truesdale, V. Pres .... Minneapolis, Minn.
T. E. Clarke, Gen. Supt .... Minneapolis, Minn.
W. B. Palmer, Pur. Agent. Minneapolis, Minn.
G. F. Wilson, M. M. & M. C. B. Minneapolis, Minn.
Missisquoi R. R. 4-8 g. 28 m.
W. C. Smith, Man .... St. Albans, Vt.
Mississippi, Terre aux Bœufs & Lake R. R.
29 miles.
M. R. Spelman, Supt .... New Orleans, La.
Mississippi & Tenn. R. R. 4-8½ g. 101 m. 12 lo. 194 c.
Jas. M. Edwards, Gen. Man .... Memphis, Tenn.
J. C. Ramsey, M. M .... Memphis, Tenn.
S. J. Bolton, M. C. B .... Memphis, Tenn.
Missouri, Kansas & Texas Ry. (See Mo. Pac.; (2) Div.)
Missouri Pacific Ry. (Leased and operated lines.)
4-8½ g. 6,029 m. 697 lo. 19,748 cars.
H. M. Hoxie, 3d V. Pres .... St. Louis, Mo.
R. B. Lyle, Pur. Agt .... St. Louis, Mo.
(1), (2) and (3) Divs.:
John Hodge, Supt. Car Dep .... St. Louis, Mo.
Frank Howard, Asst. Supt. C. D .... Marshall, Tex.
(4), (5) and (6) Divs.:
O. A. Haynes, Insp. L. C. & M .... St. Louis, Mo.
(1) Missouri Pacific Ry. 1,028 m. 155 lo. 4,218 cars.
A. M. Hagar, Supt .... Sedalia, Mo.
E. Taylor, Asst. M. M .... Sedalia, Mo.
W'n Div.: A. M. Hagar, Supt .... Sedalia, Mo.
L. Bartlett, M. M .... St. Louis, Mo.
(2) Mo., Kan. & Tex. Ry. 1,308 m. 140 lo. 4,248 cars.
Jos. Herrin, Supt .... Sedalia, Mo.
S. Irvin, Asst. Supt. Car Dep .... Sedalia, Mo.
J. B. Vandyne, Supt .... Parsons, Kan.
J. W. Haines, M. M .... Parsons, Kan.
(3) Central Branch Un. Pac. R. R. 388 m. 30 lo. 599 c.
W. W. Fagan, Supt .... Atchison, Kan.
H. V. Faries, M. M .... Atchison, Kan.
J. W. Blackburn, A. Supt. Car D .... Atchison, Kan.
(4) St. L., I. Mt. & So'n Ry. 905 m. 138 lo. 4,928 c.
Wm. Kerrigan, Supt .... St. Louis, Mo.
St. Louis Div.: W. H. Harris, M. M. De Soto, Mo.
Ark. Div.: Supt .... Little Rock, Ark.
R. M. Richardson, M. M .... Little Rock, Ark.
(5) Int. & G. No.: Supt .... Palestine, Tex.
W. S. Morris, M. M .... Palestine, Tex.
(6) Tex. & Pac: Warder Cumming, Supt. Marshall, Tex.
E. N. O. & Tr. Cont. Divs.:
Geo. Dimick, Supt .... Marshall, Tex.
J. K. Lape, M. M .... Marshall, Tex.
E. R. Smith, M. M. & M. C. B .... N. Orleans, La.
Rio Grande Div.:
L. L. Keller, Supt .... Big Springs, Tex.
J. K. Lape, M. M .... Big Springs, Tex.
Mobile & Ala. Grand Trunk R. R. 5 g. 59 m. 2 lo. 23 c.
Wm. H. Pratt, Trustee .... Mobile, Ala.
Mobile & Girard R. R. 5 g. 84 m. 7 lo. 112 cars.
W. L. Clark, Gen. Supt .... Columbus, Ga.
J. C. Albrecht, M. M .... Columbus, Ga.
A. J. Nix, M. C. B .... Columbus, Ga.
Mobile & Montgomery Ry. (See Louis. & Nash.)
Mobile & Northwestern R. R. 3 g. 31 m. 2 lo. 16 c.
Thomas T. A. Lyon, Pres .... Glendale, Miss.
Mobile & Ohio R. R. 5 g. 528 m. 75 lo. 1,353 cars.
T. M. R. Talcott, V.-Pr. & Gen. Man. Mobile, Ala.
J. G. Motley, Gen. Supt .... Mobile, Ala.
F. Jordan, Pur. Agt .... Mobile, Ala.
M. T. Carson, Gen. M. M .... Whistler, Ala.
J. T. Booth, M. C. B .... Whistler, Ala.
So'n Div.: .... Mobile, Ala.
L. J. Morris, M. M .... Macon, Miss.
No'n Div.: E. S. Hosford, Supt .... Jackson, Tenn.
H. C. Goode, M. M .... Jackson, Tenn.
Mobile & Spring Hill R. R. 5-2 g. 8 m. 1 lo. 16 cars.
F. Ingate, Manager .... Mobile, Ala.
Moline & Southeastern R. R. 3-6 g. 8 m. 2 lo. 26 c.
R. Battersly, Gen. Man .... Coal Valley, Ill.
Mont Alto R. R. 4-9 g. 21 m. 2 lo. 8 cars.
G. B. Wiestling, Supt. & P. A .... Mont Alto, Pa.
Montgomery & Eufaula Ry. (See Cen. of Ga.)
Montgomery Southern Ry. 3 g. 20 m. 1 lo. 15 cars.
S. D. Hubbard, Jr., Gen. Man. Montgomery, Ala.
Montour R. R. 4-8½ g. 12 m. 2 lo. 130 cars.
C. R. Brown, Supt. & Pur. Agt .... Imperial, Pa.
Henry Newman, M. C. B .... Imperial, Pa.
Montpelier & Wells Riv. R. R. 4-8½ g. 38 m. 3 lo. 86c.
W. A. Stowell, Supt .... Montpelier, Vt.
Montreal Portland & Boston Ry. (See Passumpsic.)
Montreal & Sorel Ry. 4-8½ g. 47 m. 3 lo. 35 c.
C. N. Armstrong, G. M. & Pur. Agt. Sorel, Que.
J. F. Armstrong, Gen. Supt .... Sorel, Que.
G. W. Pangborn, M. M .... Sorel, Que.
Montrose Ry. 3 g. 28 m. 3 lo. 24 cars.
T. G. Walter, Gen. Supt .... Tunkhannock, Pa.
Morgan's Louis. & Tex. R. R. 4-8½ g. 260 m. 46 l. 1,339 c.
J. Kruttschnitt, Supt .... New Orleans, La.
C. Trumpy, Pur. Agt .... New Orleans, La.
J. D. Connell, M. M .... Algiers, La.
Jno. Hildebrand, M. C. B .... Algiers, La.
Mount Washington R. R. 5-3 g. 3 m. 6 lo. 6 cars.
Walter Aiken, Gen. Man .... Franklin, N. H.
Muncy Creek Ry. (See Wmspt. & No. Br.)

N

Nantasket Beach R. R. 4-8½ g. 6 m. 5 lo. 25 c.
George L. Keyes, Gen. Supt .... Boston, Mass.
Naugatuck R. R. 4-8½ g. 62 m. 17 lo. 547 cars.
Geo. W. Beach, Supt .... Waterbury, Conn.
H. A. Bishop, Pur. Agt .... Bridgeport, Conn.
H'y D. Beach, Supt. R. S .... Bridgeport, Conn.
Napanee, Tamworth & Quebec Ry. In progress.
Ed. W. Rathbun, Gen. Man .... Deseronto, Ont.
R. C. Carter, Asst. Gen. Man .... Deseronto, Ont.
Narragansett Pier R. R. 4-8½ g. 8 m. 2 lo. 11 c.
G. T. Lanphear, Supt. & Pur. Agt. Peacedale, R.I.
Nashua & Rochester R. R. (See Wor. & Nash.)
Nashville, Chattanooga & St. Louis Ry.
5 g. 539 miles 87 lo. 1,979 cars.
J. W. Thomas, G. Man. & P. Agt. Nashville, Tenn.
M. J. C. Wrenne, Supt .... Nashville, Tenn.
James Cullen, M. M. & C. B .... Nashville, Tenn.
Nashville & Florence R. R. 5 g. 51 m.
J. Geddes, Supt .... Columbia, Tenn.
Natchez, Jackson & Col. R. R. 3-6 g. 100 m. 7 lo. 92 c.
E. D. Frost, Gen. Supt .... Natchez, Miss.
National Car Company. 4,000 freight cars.
Jas. R. Langdon, Pres .... Boston, Mass.
F. Stewart Stranahan, Sec. & Tr. St. Albans, Vt.
John B. Fletcher, Supt .... St. Albans, Vt.
Nebraska, Topeka, Iola & Memphis R.R. 4-8½ g. 16 m.
H. M. Clarke, Gen. Man .... Girard, Kan.
C. H. Malin, Gen. Supt .... Girard, Kan.
New Brunswick Ry. 4-8½ g. 419 m. 20 lo. 357 cars.
F. W. Cram, Gen. Man .... Woodstock, N. B.
Jesse Mathews, M. M .... Gibson, N. B.
T. N. Burpee, M. C. B .... McAdam Junc., N. B.
J. J. Seely, Pur. Agt .... Woodstock, N. B.
Thos. Armstrong, M. M .... St. Andrew's, N. B.
G. Houlton, M. C. B .... St. Andrew's, N. B.
New Brunswick & Can. Ry. (See New Brun.)
Newburg, Dutchess & Conn. R. R. 4-8½ g. 58 m.
C. L. Kimball, Supt. & P. Agt. Matteawan, N. Y.
New Castle R. R. 3-6 g. 5 m. 2 lo. 76 cars.
Geo. Pearson, Gen. Man .... New Castle, Pa.
New Castle & Beaver Valley R. R. (See Penna. Co.)
New Haven & Derby R. R. 4-8½ g. 13 m. 4 lo. 70 c.
E. S. Quintard, Supt .... New Haven, Conn.
J. M. Whitlock, M. M. & C. B. New Haven, Conn.
New Haven & No'mpton. 4-8½ g. 170 m. 28 lo. 579 c.
S. B. Opdyke, Jr., Supt .... New Haven, Ct.
R. G. Curtis, Pur. Agt .... New Haven, Ct.
Henry Fox, M. M .... New Haven, Ct.
John Sweeny, For. Car. Shps .... New Haven, Ct.
New Jersey & New York Ry. 4-8½ g. 37 m. 6 lo. 40 c.
J. D. Hasbrouck, Gen. Man .... Jersey City, N. J.
J. S. Drake, Supt. & M. M .... Hillsdale, N. J.
L. B. Van Wagonen, M. C. B .... Hillsdale, N. J.
N. J. Southern Ry. (See Phil. & Read.; N. J. So. Div.)
New London Northern R. R. (See Central Ver.)
New Orleans, B. Rouge, Vicks. & Memphis.
Jas. M. Edwards, Gen. Man .... New Orleans, La.
John Bradley, Supt .... New Orleans, La.
New Orleans Pacific Ry. (See Mo. Pac.; (6) Div.)
New Orleans & Carrollton R. R.
4-8½ g. 15 m. 12 lo. 79 cars.
C. V. Haile, Supt .... New Orleans, La.
John Dahmer, M. M .... New Orleans, La.
Jas. Thorn, M. C. B .... New Orleans, La.
New Orleans & Mobile R. R. (See Louis. & Nash.)
N. O. & Northeastern R. R. (See Cin., N. O. & Tex. Pac.)
New Orleans & Selma R. R. 5 g. 21 m. 1 lo. 8 cars.
L. B. Schofield, Supt .... Selma, Ala.
Newport & Wickford R. R. 4-8½ g. 22 m.
Theo. Warren, Supt .... Newport, R. I.
Nevada Central R. R. (See Union Pac.; (7) Div.)
Nevada County N. G. R. R. 3 g. 23 m. 3 lo. 46 cars.
John F. Kidder, Supt .... Grass Valley, Cal.
Jas. McCormick, M. M. & C. B. Grass Valley, Cal.
Nevada & Oregon R. R. 3 g. 30 m. 25 cars.
D. W. Balch, Supt .... Reno, Nev.
N. Y. Central & Hudson River R.R.
4-8½ g. 983 m. 676 lo. 25,161 cars.
J. M. Toucey, Gen. Supt .... New York, N. Y.
Chas. Reed, Pur. Agt .... New York, N. Y.
Wm. Buchanan, Supt. M. P. and R. Stock, New York, N. Y.
N. Y. & Har. Div.: C. M. Bissell, Supt. do.
P. McQ. Gibson, M. M .... New York, N. Y.
Hud. Riv. Div.: C. M. Bissell, Supt. N. York, N. Y.
W. H. Wolfrath, M. C. B .... New York, N. Y.
E'n Div.: Zenas C. Priest, Supt. Ltle Falls, N. Y.
John Ortton, M. M .... West Albany, N. Y.
L. Packard, M. C. B .... West Albany, N. Y.
W'n Div.: Geo. H. Burrows, Supt .... Buffalo, N. Y.
S. L. White, M. M .... Syracuse, N. Y.
Amos Gould, M. M .... E. Buffalo, N. Y.
E. Chamberlain, M. C. B .... E. Buffalo, N. Y.
Peter Smith, M. C. B .... E. Rochester, N. Y.
Rd. Donaby, M. C. B .... Niagara Falls, N. Y.
N. Y. Chic. & St. L. Ry. 4-8½ g. 524 m. 108 lo. 7,245 c.
Lewis Williams, Gen. Man .... Cleveland, O.
M. M. Rogers, Pur. Agt .... Cleveland, O.
Jno. Mackenzie, Supt. M. P .... Cleveland, O.
Eas'tn Div.: G. H. Kimball, Supt .... Cleveland, O.
E. A. Miller, M. M .... Conneaut, O.
West'n Div.: A. H. Evans, Supt .... Chicago, Ill.
W. H. Lewis, M. M .... Bellevue, O.
New York City & Northern. 4-8½ g. 58 m. 17 lo. 368 c.
Frank S. Gannon, Gen. Supt. High Bridge, N. Y.
Thos. Millen, M. M .... High Bridge, N. Y.
New York, Lackawanna & W'n Ry. (See Del. L. & W.)
New York, Lake Erie & Western R. R.
S. M. Felton, Jr., V. Pr .... New York, N. Y.
(1) N.Y., L.E.&W. Div.: 4-8½ g. 1,073 m. 576 lo. 30,553c.
B. Thomas, Gen. Supt .... Jersey City, N. J.
W. G. Tuller, Pur. Agt .... New York, N. Y.
F. M. Wilder, Supt. M. P. & M .... Susqueh'a, Pa.
E'n Div.: E. O. Hill, Supt .... Jersey City, N. J.
J. H. Vreeland, M. M .... Jersey City, N. J.
J. N. Mileham, M. C. B .... Jersey City, N. J.
Del. Div.: E. Van Etten, Supt. Port Jervis, N. Y.
J. Van Vechten, M. M. & C. B. Pt. Jervis, N. Y.
Susq. Div.: R. B. Cable, Act. Supt. Elmira, N. Y.
V. Blackburn, M. M .... Susquehanna, Pa.
D. B. Goodell, M. C. B .... Elmira, N. Y.
Buf. & R. Divs.: W. J. Murphy, Supt.; and
Wm. Litz, M. M .... Buffalo, N. Y.
M. Wilder, M. C. B .... Buffalo, N. Y.
B. & S.-W. Div.: C. A. Brunn, Supt. do.
W'n Div.: W. B. Coffin, Supt. Hornellsville, N. Y.
J. Hawthorne, M. M .... Hornellsville, N. Y.
N. Y. & Greenwood L. Ry. 4-8½ g. 44 m. 8 lo. 53 c.
Stephen Smith, Supt .... Jersey City, N. J.
F. A. Stinard, M. M .... Pompton, N. J.
(2) N. Y., Pa. & O. Div.: 4-8½ g. 565 m. 221 lo. 7,794 c.
Chas. Paine, Gen. Supt .... Cleveland, Ohio.
J. H. Holway, Pur. Agt .... Cleveland, Ohio.
Wm. Fuller, Supt. M. P .... Cleveland, O.
S. V. Smith, Asst. Gen. M. C. B .... Kent, Ohio.
E'n Div.: A. L. Dunbar, Supt .... Meadville, Pa.
J. A. Cooper, M. M .... Meadville, Pa.
D. S. Dockstader, M. C. Rep .... Meadville, Pa.
W'n Div.: T. A. Phillips, Supt .... Galion, O.
Wm Hill, M. M .... Galion, O.
Geo. Wilson, For. Car Rep .... Galion, Ohio.
Maho'g Div.: N. F. Wood, Supt .... Cleveland, O.
N. Wright, M. M .... Cleveland, O.
C. N. Thorp, M. C. Rep .... Cleveland, O.
New York, New Haven & Hartford R. R.
4-8½ g. 203 m. 123 lo. 2,768 cars.
E. M. Reed, V. P. & Gen. Supt. New Haven, Ct.
R. N. Dowd, Pur. Agt .... New Haven, Ct.
John Henney, Jr., Supt. M. P .... New Haven, Ct.
N. Y. & N. H. Div.: W. H. Stevenson, Supt .... N. Y.
Shore Line and Air Line Divs.:
O. M. Shepard, Supt .... N. Haven, Ct.
Jas. Denver, M. C. B .... New Haven, Ct.
Hart. Div.: C. S. Davidson, Supt .... Hartford, Ct.
O. C. Lackey, M. M .... Hartford, Ct.
Jno. Whitmore, For. C. Dept .... Hartford, Ct.
N. Y., Ontario & Western Ry. (See N. Y., W. Sh. & Buf.)
N. Y., Pittsb'h & Chicago. 4-8½ g. 20 m. 2 lo. 32 c.
Geo. W. Dixon, Supt .... New Galilee, Pa.
H. P. Hanna, Pur. Agt .... Pittsburgh, Pa.
N. Y., Pennsylvania & Ohio R. R. (See N. Y., L. E. & W.)
New York, Philadelphia & Norfolk R. R.
4-8½ g. 10 m. 1 lo. 4 cars.
H. W. Dunne, Supt .... Cape Charles, Va.
New York, Providence & Boston R. R.
4-8½ g. 83 m. 29 lo. 430 cars.
J. B. Gardner, Supt .... Providence, R. I.
J. L. Hayden, Pur. Agt .... Stonington, Conn.
Geo. H. Griggs, M. M. & C. B .... Providence, R. I.
N. Y., Susqueh'na & W'n. 4-9 g. 147 m. 33 lo. 1,469 c.
F. A. Potts, Gen. Man .... New York, N. Y.
C. D. McKelvey, Supt .... Jersey City, N. J.
C. T. Demarest, Pur. Agt .... New York, N. Y.
W. C. Ennis, M. M. & C. B .... Wortendyke, N. J.
New York, Texas & Mexican Ry.
4-8½ g. 92 m. 6 lo. 95 cars.
Allen McCoy, Gen. Man .... Victoria, Tex.
J. G. Conlon, M. M .... Victoria, Tex.
New York, West Shore & Buffalo.
4-8½ g. 850 m. 177 lo. 7,291 c.
J. D. Layng, Gen. Man .... New York, N. Y.
C. W. Bradley, Gen. Supt .... Weehawken, N.J.
P. S. Bemis, Pur. Agt .... New York, N. Y.
R. H. Soule, Supt. M. P .... Frankfort, N. Y.
H. R. Div.: J. P. Bradfield, Act. Supt., Weehawken, N. J.
Thos. Oldcorn, M. M .... New Durham, N. J.
Buff. Div.: D. B. McCoy, Supt .... Newark, N. Y.
N. Falls Div.: W. J. Murphy, Supt .... Buffalo, N. Y.
Coeymans to Newark.
Jas. M. Boon, M. M .... Frankfort, N. Y.
Newark to Buffalo.
Geo. W. West, M. M .... East Buffalo, N. Y.
New York, Ontario & Western.
J. E. Childs, Gen. Supt .... New York, N. Y.
N. Y. Woodhaven & Rockaway R. R. (See Long Is.)
N. Y. & Greenwood Lake Ry. (See N. Y., L. E. & W.)
N. Y. & Manhattan Beach Ry. (See Long Island.)
New York & Long Branch R. R. (See Phil. & Read.)
New York & New England R. R.
4-8½ g. 473 m. 145 lo. 3,959 cars.
W. H. Turner, Gen. Supt .... Boston, Mass.
W. W. McKim, Pur. Agt .... Boston, Mass.
J. B. Henney, Supt. M. P .... Boston, Mass.
Geo. E. Boyden, M. M .... Norwood, Mass.
Elias E. Pratt, M. C. B .... Norwood, Mass.
East Div: E. G. Allen, Supt .... Boston, Mass.
Nor. Div.: P. St. M. Andrews, Supt .... Norwich, Ct.
, M. M .... Norwich, Ct.
Prov. Div.: L. W. Palmer, Supt .... Providence, R. I.
Hfd. Div.: E. Holbrook, Supt .... Hartford, Ct.
E. M. Humstone, M. M .... Hartford, Ct.
West'n Div.: C. H. Platt, Supt .... Fishkill, N. Y.
Woons'kt Div.:
E. N. Tucker, Supt .... Needham, Mass.
New York & Sea Beach R. R. 4-8½ g. 6 m. 6 lo. 41 c.
W. O. McDowell, Gen. Man .... New York, N. Y.
C. W. Douglass, Gen. Supt .... Bay Ridge, N. Y.
Newark, Somerset & Straitsville R. R. (See B. & O.)
Newburg, Dutchess & Conn. R. R. 4-8½ g. 59 miles.
C. L. Kimball, Gen. Supt .... Matteawan, N. Y.
W. G. Van Buskirk, M. M. & C. B., Dutchess Junction, N. Y.
Newfoundland Ry. 3-6 g. 45 m. 7 lo. 41 c.
C. X. Hobbs, Gen. Man .... St. John's, N'f'd.
Norfolk Southern R. R. 4-8½ g. 74 m. 7 lo. 182 c.
M. K. King, Gen. Man. & Pur. Agt. Norfolk, Va.
J. S. Whitworth, M. M. & C. B .... Norfolk, Va.
Norfolk & Ocean View R. R. & Hotel Co.
3 g. 8 m. 2 lo. 9 cars.
W. H. Taylor, Pres .... Norfolk, Va.

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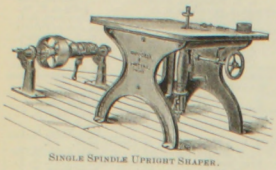
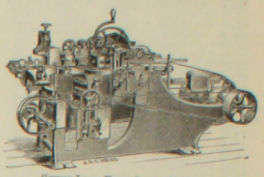


SINGLE SPINDLE UPRIGHT SHAPER.



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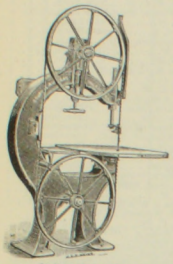
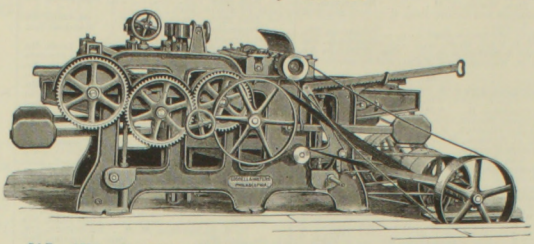


35-INCH BAND SAW.



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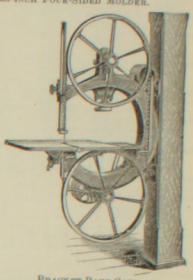
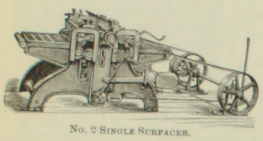


BRACKET BAND SAW.



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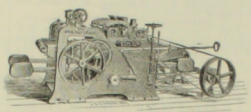

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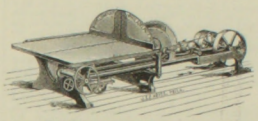
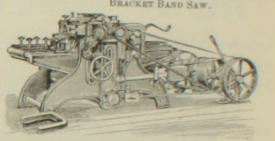


NEW RAILWAY CUT-OFF SAW.



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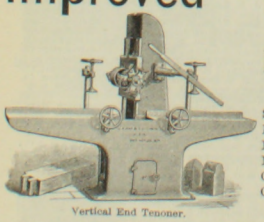
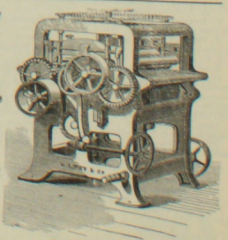


Vertical End Tenoner.



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J. M. Dickey, Gen. Man....Norfolk, Va.
Norfolk & Western R. R. (See Shenandoah Val.)
North-Eastern R. R. of Ga. 5 g. 72 m. 2 lo. 20 cars
H. R. Bernard, Supt....Athens, Ga.
North-Eastern R. R. (S. C.) (See Wil. & Wel.)
North Pacific Coast R. R. 3 g. 84 m. 12 lo. 320 cars,
Gen. Supt....San Rafael, Cal
W. F. Russell, Pur. Agt....San Francisco, Cal
E. L. Reese, M. M....Saucelito, Cal
North Shore Ry. 4-8½ g. 209 m. 21 lo. 564 c.
W. Wainwright, Gen. Man....Montreal, Can.
A. Davis, Supt. & Pur. Agt....Quebec, Can
Northern (N. H.), and Concord & Claremont Rys. (See Boston & Lowell.)
Northern (N. J.) R. R. (See N. Y., L. E. & W'n.)
Northern Central Ry. (See Penna. R. R. (6) Div.)
North'n Pacific R. R. 4-8½ g. 2,207 m. 391 lo. 9,897 c.
T. F. Oakes, Gen. Man....St. Paul, Minn.
John H. Ames, Gen. Pur. Agt..St. Paul, Minn.
Geo. W. Cushing, Supt. M. P., M. & R. S. do.
J. C. Barber, M. C. B....Brainerd, Minn.
(1) E'n Div.: J. T. Odell, A. Gen. Man. St. Paul, Minn.
H. J. Small, A. S. Mach....Brainerd, Minn.
1st Gr. Div.: M. C. Kimberly, Supt. Brainerd, Minn.
M. C. B....Brainerd, Minn.
2d Gr. Div.: J. M. Graham, Supt. Jamestown, Dak.
C. C. Quinn, M. M....Fargo, Dak.
A. Bardsley, M. M....Mandan, Dak.
F. Greene, A. Supt....Mandan, Dak.
3d Gr. Div.: S. R. Ainslie, Supt.. Glendive, Mont
S. L. Bean, M. M....Glendive, Mont.
J. C. Munro, M. M....Livingston, Mont.
(2) W'n Div.: J. M. Buckley, Asst. Gen. Man. New Tacoma, W. T
H. D. Sanborn, P. Agt....Portland, Ore
W. T. Small, A. S. Mach....Portland, Ore
4th Gr. Div.: F. W. Gilbert, Supt. Missoula, Mont.
F. P. Weymouth, Supt....Sprague, W. T.
Wm. Garlock, M. M....Missoula, Mont
J. Evans, M. M....Sprague, W. T.
5th Gr. Div.: Otis Sprague, Supt...Tacoma, W. T.
H. H. Warner, M. M....Tacoma, W. T.
Northern & North-W'n Rys. 4-8½ g. 378 m. 50 lo. 1,195 c.
James Webster, Supt....Toronto, Can.
W. C. Schreber, Pur. Agt....Allandale, Can.
P. Clarke, M. M....Toronto, Can.
Northern & Western Ry. 4-8½ g. 50 m.
J. B. Snowball, Man....Chatham, N. B.
Nova Scotia Ry. 4-8½ g. 79 m. 9 lo. 268 c.
C. A. Scott, Gen. Man....New Glasgow, N. S.
M. F. Punch, M. M....New Glasgow, N. S.

O

Ogdensburg & Lake Champlain R. R. 4-8½ g. 130 m. 33 lo. 1,694 cars.
A. A. Gaddis, Gen. Man....Ogdensburg, N. Y.
E. B. Burnham, Pur. Agt...Ogdensburg, N. Y.
Wm. A. Short, M. M....Malone, N. Y.
H. S. Leach, Master Builder. Ogdensburg, N. Y.
Ohio Central R. R. 4-8½ g. 325 m. 46 lo. 4,760 cars.
John E. Martin, Rec....Toledo, O.
T. M. Peelar, Supt....Bucyrus, O.
F. W. Stewart, Pur. Agt....Toledo, O.
J. B. Morgan, M. M. & C. B....Bucyrus, O.
Ohio River R. R. 4-9 g. 9 lo. 350 cars.
C. L. Williams, Asst. Supt. Parkersburg, W. Va.
S. Litchworth, M. M....Parkersburg, W. Va.
Ohio Southern R. R.:
W. H. Van Tassel, Supt....Springfield, O.
John King, M. M....Springfield, O.
Ohio & Mississippi Ry. 4-9 g. 616 m. 113 lo. 2,501 cars.
W. W. Peabody, Pres. & Gen. Man. Cincinnati, O.
G. E. Atwood, Pur. Agt....Cincinnati, O.
J. H. Setchel, Gen. M. M....Cincinnati, O.
Cin. Div.: C. B. Cole, Supt....Seymour, Ind.
J. P. Coulter, Gen. M. C. B....Aurora, Ind.
E. E. Jenks, A. Gen. For....Seymour, Ind.
W. L. Hoffecker, Ass't M. M. Vincennes, Ind.
A. N. Bradley, M. C. P....Cochran, Ind
St. L. & Sp. Div.: C. M. Stanton, Supt. St. Louis, Mo.
J. W. Stokes, M. M. (Spring. Div.)..Pana, Ill.
Louisv. Div.: C. B. Cole, Supt....Louisville, Ky
Oil City & Chicago R. R. (See Buff., N. Y. & Phil.)
Old Colony R. R. 4-8½ g. 470 m. 124 lo. 3,527 cars.
J. R. Kendrick, Gen. Man....Boston, Mass.
R. W. Husted, Pur. Agt....Boston, Mass.
Jas. N. Lauder, Supt. R. S....Boston, Mass.
Sam. Stevens, S. Br. & Bld'gs....Boston, Mass.
Main Li. Div.: J. H. French, Supt...Boston, Mass.
F. M. Twombly, M. M....Boston, Mass.
Cape Cod Div.: C. H. Nye, Supt..Hyannis, Mass.
F. M. Twombly, M. M....Boston, Mass.
No. Div.: S. A. Webber, Supt....Fitchburg, Mass.
A. W. Twombly, M. M....Taunton, Mass.
Olympia & Chehalis Val. R. R. 3 g. 15 m.
Otis Sprague, Supt....Olympia, W. T.
Oregon Ry. & Navigation Co. 3 & 4-8½ g. 807 m. 72 lo. 1,611 cars.
C. H. Prescott, V. P. & Gen. Man. Portland, Ore.
F. T. Dodge, Supt. (Riv. Div.)....Portland, Ore.
H. S. Rowe, Supt. (Ry Div.)....Portland, Ore.
J. M. Drake, Pur. Agt....Portland, Ore.
Goodall, Perkins & Co., Supt. (Ocean Div.) San Francisco, Cal
C. C. Hobart, Gen. M. M....The Dalles, Ore
P. Carlsen, Foreman....The Dalles, Ore.
Oregon & California R. R. 4-8½ g. 449 m. 43 lo. 626 c.
R. Koehler, Man....Portland, Ore
J. Brandt, Gen. Supt....Portland, Ore.
W. T. Bodley, Pur. Agt....Portland, Ore.
A. Brandt, M. M....Portland, Ore.
Ottumwa & Kirkville Ry. 4-8½ g. 13 m.
J. A. Kebler, Supt....Ottumwa, Ia.
Owensboro & Nashville R. R. 5 g. 44 m. 3 lo. 70 c.
W. M. Newbold, Supt....Owensboro, Ky.
J. T. Edwards, M. M. & C. B..Owensboro, Ky.
Oxford & Henderson R. R. 4-8½ g. 13 m. 2 lo. 11 c.
James A. White, Gen. Supt...Henderson, N. C.
James E. Lawrence, M. M...Henderson, N. C.

P

Pacific Coast Ry. 3 g. 64 m.
J. M. Fillmore, Manager San Luis Obispo, Cal.
John Walch, M. M. & C. B. do.
Painesville & Youngstown Ry. 3 g. 65 m. 7 lo. 319 c.
R. K. Paige, Rec. & Man....Painesville, O.
J. A. Newcome, Supt. R. S....Painesville, O.
Panama R. R. 5 g. 48 m. 14 lo. 2,200 cars.
G. A. Burt, Gen. Supt....Aspinwall, U. S. Col.
E. Z. Penfield, Pur. Agt....New York, N. Y.
Jos. Beaumont, M. M....Aspinwall, U. S. Col
Passumpsic R. R. 4-8½ g. 147 m. 28 lo. 1,101 cars.
E. Raymond, Pres. & Pur. Agt..Boston, Mass.
H. E. Folsom, Supt....Lyndonville, Vt.
L. L. Brigham, M. M....Lyndonville, Vt.
L. F. Woodard, M. C. B....Lyndonville, Vt.
Paw Paw and Toledo & South Haven R. Rds. 3 g. 20 m. 3 lo. 16 cars.
John Ihling, Supt....Lawton, Mich.
Peach Bottom R. R. 3 g. 35 m. 6 lo. 52 cars.
B. B. Newton, Supt. & Pur. Agt...Oxford, Pa.
E. H. Williams, M. C. B....York, Pa.
W. P. Kirk, M. M....Oxford, Pa.
Pemigewasset Valley R. R. 4-8½ g. 21 m. 2 lo. 127c.
J. Thomas Vose, Pres....Boston, Mass.
Pennsylvania Co.'s (5) Roads 4-9 g. 3,222 m. 920 lo. 32,809 cars.
Gen. Divs. (1), (2), (3), (4) and (5).
Wm. A. Baldwin, Gen. Man....Pittsburg, Pa.
John Thomas, Gen. Supt....Pittsburg, Pa.
Wm. Mullins, Gen. Pur. Agt....Pittsburg, Pa.
Joseph Wood, Supt. M. P....Fort Wayne, Ind.
(1) Pittsburgh, Ft. Wayne & Chicago Ry. 4-9 g. 468 m. 288 lo. 8,023 cars.
E'n Div.: A. B. Starr, Supt....Allegheny, Pa.
Geo. J. Parkin, M. M....Allegheny, Pa.
D. M. Peppard, M. M....Crestline, O.
W'n Div.: C. D. Law, Supt....Ft. Wayne, Ind.
F. D. Casanave, M. M....Ft. Wayne, Ind.
A. H. Somers, Gen. For. Shops...Chicago, Ill.
(2) Ashtabula & Pittsburgh, and
(3) Erie & Pittsburg R. Rds. 221 m. 29 lo. 1,362 c.
John M. Kimball, Supt..Lawrence Junc., Pa.
J. A. Wood, Gen. For. Shops....Erie, Pa.
(4) Cleveland & Pittsb'g R. R. 225 m. 97 lo. 3,534 c.
R. F. Smith, Asst. Man....Cleveland, O.
Philip Bruner, Supt....Wellsville, O.
W. F. Beardsley, Mast. of Mach. Wellsville, O.
(5) No-W'n Ohio Ry.: J. S. Morris, Supt...Toledo, O.

Pennsylvania R. R. Co.'s Roads. (7 Gen. Divs.) 4-9 g. 3,158 m. 1,459 loco. 66,816 cars.
Chas. E. Pugh, Gen. Man....Philadelphia, Pa.
Enoch Lewis, Pur. Agt....Philadelphia, Pa.
S. M. Provost, Supt. Trans...Philadelphia, Pa.
Theo. N. Ely, Gen. S. M. P....Altoona, Pa.
Pennsylvania R. R. Divs. 4-9 g. 1,213 m. 705 lo. 46,819 cars.
Robt. E. Pettit, Gen. Supt....Altoona, Pa.
Frank L. Sheppard, Supt. M. P..Altoona, Pa.
G. W. Strattan, M. M....Altoona, Pa.
Jno. P. Levan, Gen. Fore....Altoona, Pa.
Phila. Div.: Tho. Gucker, Supt. Philadelphia, Pa.
H. D. Garrett, M. M....W. Philadelphia, Pa.
I. W. Van Houten, Gen. For....W. Phila., Pa.
Schuylkill Div.:
Jas. Reed, Supt....Reading, Pa.
Mid. Div.: O. E. McClellan, Supt. Harrisburg, Pa.
E. L. Caum, M. M....Harrisburg, Pa.
Samuel W. Myers, Gen. For. Harrisburg, Pa.
Altoona Div.: J. B. Hutchinson, Supt. Altoona, Pa.
Pitts. Div.: Robert Pitcairn, Supt. Pittsburgh, Pa.
D. O. Shaver, M. M....Pittsburgh, Pa.
J. G. Stewart, Gen. For....Pittsburgh, Pa.
W. Pa. Div.: A. P. Kirtland, Supt. Blairsville, Pa.
Wm. B. Norris, M. M....Blairsville, Pa.
M. H. Falls, Gen. For....Blairsville, Pa.
Fred. Div.: Wilson Brown, Supt....York, Pa.
Tyrone Div.: S. S. Blair, Supt....Tyrone, Pa.
Lew. Div.: Wm. M. Phillips, Supt. Lewistown, Pa.
Bed. Div.: R. L. Holliday, Supt....Bedford, Pa.
Monong. Div.: David M. Watt, Supt. Pittsburgh, Pa.
Wm. Lininger, M. M....Ormsby, Pa.
(2) United R. Rs. of N. J. Divs. 471 m. 330 lo. 4,041 c.
F. Wolcott Jackson, Gen. St..Jersey City, N. J.
H. S. Hayward, Supt. M. P...Jersey City, N. J.
David H. Baker, Gen. For...Jersey City, N. J.
N. Y. Div.: Jos. A. Crawford, Supt. Jersey City, N. J.
L. A. Bosdevex, M. M....Jersey City, N. J.
E. F. Bosdevex, Gen. For..Jersey City, N. J.
Belv. Div.: J. A. Anderson, Supt. Lambertv., N. J.
R. McDowell, M. M....Lambertville, N. J.
Amboy Div.: W. N. Bannard, Supt. Camden, N. J.
Thos. Kerr, M. M....So. Amboy, N. J.
P. S. Bozart, Gen. For....So. Amboy, N. J.
(2½) Camden & At. Rd.: 75 m. 18 l. 261 c.
A. G. Dayton, Supt....and
Rufus Hill, M. M....Camden, N. J.
Samuel Wills, M. C. B....Camden, N. J.
(3) West Jersey R. R. 4-9 g. 188 m. 27 lo. 294 cars.
A. G. Dayton, Gen. Supt....Camden, N. J.
W. McAlister, M. M....Camden, N. J.
C. C. Williams, Gen. For....Camden, N. J.
(4) Phila., Wilm. & Balt. R. R. 409 m. 128 lo. 1,882 c.
H. F. Kenney, Gen. Supt....Philadelphia, Pa.
J. M. Wallis, S. M. P....Philadelphia, Pa.
H. D. Gordon, M. M....Wilmington, Del.
W. H. Lungren, M. C. B....Wilmington, Del.
Cen. Div.: L. K. Lodge, Supt....Media, Pa.
Del. Div.: I. N. Mills, Supt....Clayton, Del.
Md. Div.: H. H. Carter, Supt..Wilmington, Del.
(5) Phila. & Erie R. R. Divs.: 437 m. 110 lo. 3,089 c.
R. Neilson, Gen. Supt....Williamsport, Pa.
A. O. Dayton, Supt. Mo. Po..Williamsport, Pa.
E'n. Div.: E. B. Westfall, Supt. Williamsport, Pa.
Sun. H. & W. Div: A. Walter, Supt.; and
H. K. Stout, M. M....Sunbury, Pa.
Mid. Div.: Tho. A. Roberts, Supt....Renovo, Pa.
Wm. L. Holman, M. M....Renovo, Pa.
West'n Div.: J. W. Reynolds, Supt....Erie, Pa.
J. Gaskill, M. M....Erie, Pa.
(6) Northern Central Ry. 4-9 g. 346 m. 152 lo. 6,610 c.
Robert Neilson, Gen. Supt...Williamsport, Pa.
Supt. M. P....Williamsport, Pa.
A. W. Sumner, Pur. Agt....Baltimore, Md.
J. M. Coale, M. M....Baltimore, Md.
G. W. Demarest, Gen. For....Baltimore, Md.
Susq. Div.: E. B. Westfall, Supt. Williamsport, Pa.
Sham. Div.: A. Walter, Supt....Sunbury, Pa.
Elm. & Can. Divs.: S. Meade, Supt..Elmira, N. Y.
Jas. Strode, M. M....Elmira, N. Y.
J. C. Dyott, Gen. For....Elmira, N. Y.
Sodus Bay Div.: S. Mead, Supt. Sodus Point, N. Y.
Baltimore Div.: H. W. Kapp, Supt. Baltimore, Md.
(7) Balt. & Pot. & Alex. & Fred. 125 m. 30 lo. 360 c.
H. F. Kenny, Gen. Supt....Philadelphia, Pa.
A. W. Sumner, Pur. Agt....Baltimore, Md.
J. M. Wallis, Supt. Mo. Po....Philadelphia, Pa.
H. D. Gordon, M. M....Wilmington, Del.
J. Lescallett, For. Mach. Shop. Washington, D. C.
R. F. Downs, For. Car Shop..Washington, D. C.
Penn. Coal Co.'s R. R. 4-3 g. 67 m. 23 eng. 3,271 c.
J. B. Smith, Gen. Supt....Dunmore, Pa.
And. Crane, M. M....Dunmore, Pa.
Geo. W. Simpson, M. C. B....Dunmore, Pa.
Pennsylvania, Slatington & New England R. R. In progress. 4-8½ g. 18 m. 1 lo. 20 cars.
C. H. Stanton, Supt....New York, N. Y.
Pennsylvania & Erie R. R.—Early Branch.
C. R. Early, Gen. Supt....Ridgeway, Pa.
Pensacola & Atlantic R. R. 5 g. 161 m. 9 lo. 67 cars.
E. O. Saltmarsh, Gen. Supt....Pensacola, Fla.
W. D. Robb, M. M....Pensacola, Fla.
Pensacola & Perdido R. R. 5 g. 10 m. 5 lo. 92 cars.
B. F. Simmons, Pr. & Supt....Pensacola, Fla.
H. W. Simmons, Pur. Agt....Pensacola, Fla.
J. C. Schutte, M. M....Pensacola, Fla.
People's Ry. 4-8½ g. 15 m. 2 lo. 14 cars.
W. D. Pollard, Supt....Pottsville, Pa.
Peoria, Decatur & Evansville Ry. 4-8½ g. 254 m. 30 lo. 1,660 cars.
G. L. Bradbury, Gen. Man....Peoria, Ill.
P. Reilly, M. M....Mattoon, Ill.
Peoria & Farmington R. R. (See Cen. Ia.)
Peoria & Pekin Union Ry. 4-8½ g. 20 m. 12 lo. 106 c.
Thos. B. Burnett, Gen. Supt. & P. A. Peoria, Ill.
O. W. Bell, Supt....Peoria, Ill.
R. F. Hurd, M. M. & C. B....Peoria, Ill.
Perkiomen R. R. 4-8½ gauge 39 miles.
D. B. Clack, Supt....Perkiomen Junction, Pa.
H. Boyd, Pur. Agt....Norristown, Pa.
Petersburg R. R. 4-8½ g. 64 m. 10 lo. 133 cars.
R. M. Sully, Supt....Petersburg, Va.
Geo. F. Jones, Pur. Agt....Petersburg, Va.
J. R. Woodard, M. M....Petersburg, Va.
Phila., Wilmington & Balt. R. R. (See Penna. R. R.)
Peterborough & Hillsborough. (See Northern, N. H.)
Philadelphia, Newtown & N. Y. R. R. 4-8½ g. 23 m.
W. M. Geary, Supt....Philadelphia, Pa.
Phila. & Atlantic City R. R. 4-8½ g. 54 m.
John E. Wootten, Gen. Man. Philadelphia, Pa.
W. Bertolet, Supt....Philadelphia, Pa.
W. S. Wilson, Pur. Agt....Philadelphia, Pa.
Philadelphia & Erie R. R. (See Penna. R. R.; (5) Div.)
Philadelphia & Reading R. R. 4-8½ g. 1,588 m. 940 lo. 57,477 cars.
John E. Wootten, Gen. Man..Philadelphia, Pa.
W. S. Wilson, Pur. Agt....Philadelphia, Pa.
Geo. Eltz, Supt. Trans....Reading, Pa.
L. B. Paxson, Eng. of Mach....Reading, Pa.
No. Penn. & Bound Brook Div.:
I. A. Sweigard, Supt....Philadelphia, Pa.
Mahanoy & Susquehanna Div.:
J. H. Olhausen, Supt....Palo Alto, Pa.
D. C. Reinhart, Asst. Supt....Catawissa, Pa.
A. A. Hesser, Asst. Supt. Mahanoy Plane, Pa.
Schuylkill & Susquehanna Br.:
H. W. Tracy, Supt....Pine Grove, Pa.
Reading & Columbia R. R.:
A. M. Wilson, Supt....Columbia, Pa.
N. J. Central and N. J. Southern Divs.:
W. W. Stearns, Supt....Elizabeth, N. J.
Lehigh & Susquehanna Div.:
G. W. Twining, Supt....Mauch Chunk, Pa.
Pittsburgh, Bradford & Buffalo Ry. (See Pitts. & West.)
Pittsburgh, Chartiers & Youghiogheny R. R. 4-8¾ g. 19 m.
Geo. S. Griscom, Gen. Man....Pittsburgh, Pa.
Pittsburgh, Cincinnati & St. Louis Ry. (5 Gen. Divs.) 4-9 g. 916 m. 239 lo. 7,133 cars.
James McCrea, Manager....Columbus, O.
Wm. Mullins, Pur. Agt....Pittsburgh, Pa.
Edward B. Wall, Supt. M. P....Columbus, O.
(1) P. C. & St. L. Div.: E. B. Taylor, Supt. Pittsburgh, Pa.
C. B. Street, M. M....Dennison, O.
J. M. Copeland, G. F. Car Shops. Steubenville, O.
(2) C. & M. V. Div.: W. F. Black, Supt..Zanesville, O.
Leroy Kells, M. M....Lancaster, O.
Wm. Meikle, Gen. For....Lancaster, O.

Daniel Jewell, Gen. F. Car Shops. Lancaster, O.
(3) Li. Mi. Div.: Ralph Peters, Supt....Cincinnati, O.
Leroy Kells, M. M....Cincinnati, O.
Jos. Underwood, G. F. Car Shops. Cincinnati, O.
(4) J. M. & I. R. R.: E. W. McKenna, Supt. Louisville, Ky.
Wm. Swanston, M. M....Jeffersonville, Ind.
Edw. Austin, G. F. C. Shops. Jeffersonville, Ind.
(5) Indianapolis & Vincennes R. R.
J. J. Turner, Supt....Indianapolis, Ind.
Pittsburgh, Cleveland & Toledo R. R. 4-8¾ g. 78 m. 18 lo. 525 cars.
C. H. Andrews, Pres....Youngstown, O.
W. F. Hofecker, M. M....Youngstown, O.
Pittsburgh, Ft. Wayne & Chicago Ry. (See Penna. Co.)
Pittsburgh Southern Ry. (See Balt. & O.)
Pitts. & Castle Shannon R. R. 3-4 g. 9 m. 5 lo. 428 c.
Gen. Supt....Pittsburgh, Pa.
Holmes Ward, M. M....Castle Shannon, Pa.
Wm. E. Long, M. C. B....Pittsburgh, Pa.
Pitts. & Lake Erie R. R. 4-8¾ g. 70 m. 30 lo. 1,528 c.
W. C. Quincy, Gen. Man....Pittsburgh, Pa.
D. H. Hostetter, Pur. Agt....Pittsburgh, Pa.
R. W. Jones, Mast. Trans....Pittsburgh, Pa.
S. W. Haines, M. M....Pittsburgh, Pa.
Pittsburgh, McKeesport & Youghiogheny. 4-8¾ g. 57 m. 19 lo. 278 cars.
W. C. Quincy, Gen. Man....Pittsburgh, Pa.
R. W. Jones, M. of Trans....Pittsburgh, Pa.
S. W. Haines, M. M....Pittsburgh, Pa.
Pitts. & Western R. R. 3 & 4-8½ g. 274 m. 50 lo. 1,407 c.
Pitts., Bradford & Buff. Ry. 3 g. 93 m. 8 lo. 163 c.
Tho. M. King, Gen. Man....Allegheny, Pa.
J. T. Johnson, Supt....Allegheny, Pa.
J. Morton Hall, Pur. Agt....Allegheny, Pa.
W. M. Flahavhan, M. M....Allegheny, Pa.
Pontiac, Oxford & Pt. Austin R. R. 100 m.
Geo. W. Debevoise, Pr. & Gen. Man. N. York, N. Y.
Jas. Houston, Gen. Supt....Pontiac, Mich.
Port Huron & No.-Western Ry. 3 g. 218 m. 14 lo. 288 c.
H. McMorran, G. Man. & P. A. Port Huron, Mich.
I. R. Wadsworth, Supt....Port Huron, Mich.
Chas. Diefenbach, M. M....Port Huron, Mich.
Benj. Hillier, M. C. B....Port Huron, Mich.
Port Jervis & Monticello R. R. 4-8½ g. 24 m. 3 lo. 13 c.
M. V. Heller, Gen. Man....Port Jervis, N. Y.
Port Royal & Augusta. 5 g. 180 m. 16 lo. 310c. and Augusta & Knoxville Rys.
J. N. Bass, Supt....Augusta, Ga.
T. F. Warwick, M. M. & M. C. B. Augusta, Ga.
Portland & Ogdensburg. 4-8½ g. 110 m. 11 lo. 311 c.
J. Hamilton, Gen. Supt. & P. A..Portland, Me.
M. M....Portland, Me.
W. G. Brewer, M. C. B....Portland, Me.
Portland & Rochester R. R. 4-8½ g. 52 m. 8 lo. 226 c.
J. W. Peters, Supt. & Pur. Agt...Portland, Me.
E. H. C. Tompson, For. of Mach...Portland, Me.
David Dow, For. of Car Repairs. Portland, Me.
Potomac, Fred.'g & Pied. R. R. 3 g. 38 m. 2 lo. 38 c.
Will M. Grafton, Supt....Fredericksburg, Va.
W. J. Sweigard, M. M....Fredericksburg, Va.
Pough., Hart. & Bos. R. R. 4-8½ g. 45 m. 4 lo. 65 c.
J. A. Perkins, Supt....Poughkeepsie, N. Y.
John L. Donaldson, M. M. Poughkeepsie, N. Y.
Pratt Coal & Iron Company's R. R. 5 g. 20 m. 4 lo. 184 c.
W. L. Gude, Gen. Man....Pratt Mines, Ala.
Prescott & Thirty-Fifth Parallel R. R. 4-8½ g. 77 miles in progress.
Samuel A. Henszey, Gen. Man..Prescott, Ariz.
Prince Edward Island Ry. 3-6 g. 220 m. 21 lo. 350 c.
Jas. Coleman, Supt. & Pur. Agt.;
Jos. Unsworth, M. Supt. & Storekeeper; and
D. M. Fraser, M. C. B....Charlottetown, P. E. I.
Profile & Franconia Notch R. R. 3 g. 15 m. 3 lo. 18 c.
Emmons Raymond, Pur. Agt....Boston, Mass.
C. H. Greenleaf, Supt....Profile House, N. H.
Prospect Park & Coney Island R. R. 4-8½ g. 15 m. 8 lo. 123 cars.
And. R. Culver, Pres....Brooklyn, N. Y.
R. Schermerhorn, Supt....Brooklyn, N. Y.
Martin Painter, M. M....Brooklyn, N. Y.
Prov., Warren & Bristol R. R. 4-8½ g. 19 m. 6 lo. 79 c.
Waterman Stone, Supt....Providence, R. I.
Rufus Smith, M. M. & C. B....Bristol, R. I.
Prov. & Springfield R. R. 4-8½ g. 23 m. 4 lo. 92 c.
Wm. Tinkham, Gen. Man....Providence, R. I.
G. T. Richardson, M. M....Providence, R. I.
Prov. & Worcester. 4-8½ g. 50 m. 37 lo. 1,253 c.
W. E. Chamberlain, Supt....Providence, R. I.
A. Griggs, Supt. L. & C. D....Providence, R. I.
Pullman's Palace Car Co. 1,100 passenger cars.
Geo. M. Pullman, Pres....Chicago, Ill.
H. Porter, V. Pres....New York, N. Y.
Geo. F. Brown, Gen. Man....Chicago, Ill.
Wm. A. Angell, Pur. Agt....Chicago, Ill.
S. W. Bretzfield, Asst. Pur. Agt. New York, N. Y.
A. Rapp, Man. (Chicago Works)..Chicago, Ill.
H. L. Spaulding, Man. (Det. Shops). Detroit, Mich.
E. A. Benson, Supt. Shops....St. Louis, Mo.

Q

Quebec Central Ry. 4-8½ g. 156 m. 10 lo. 267 cars.
J. R. Woodward, Gen. Man..Sherbrooke, P. Q.
A. Steele, Supt....Sherbrooke, Que.
R. D. Morkill, Jr., Pur. Agt..Sherbrooke, P. Q.
Jas. Seiveright, M. M....Sherbrooke, P. Q.
Quebec, Montreal, Ottawa & Occidental Ry. 4-8½ g. 354 m. 36 lo. 993 cars.
L. A. Senecal, Gen. Supt....Quebec, Que.
Quebec & Lake St. John Ry. 4-8½ g. 36 m. 3 lo. 55 c.
J. G. Scott, Manager....Quebec, Can.
Frank Fournier, Supt....St. Raymond, P. Q.
John T. Eames, M. M....St. Raymond, P. Q.
Queen Anne's & Kent and Townsend Branch R. R. (See Penna.; (4) Div.)

R

Raleigh & Augusta Air-Line: Carolina Central Raleigh & Gaston R. Rs. 4-8½ g. 446 m. 52 lo. 1,052 c.
John C. Winder, Gen. Man. & P. A. Raleigh, N. C.
Raleigh Rds. 4-8½ g. 200 m. 27 lo. 638 cars.
B. R. Harding, Supt. of Mach. Raleigh, N. C.
Carolina Cen. R. R. 4-8½ g. 242 m. 26 lo. 431 c.
L. C. Jones, Supt....Wilmington, N. C.
James Maglenn, M. of Mach. Laurinburg, N. C.
S. R. Ethridge, M. C. B....Laurinburg, N. C.
Rensselaer & Saratoga R. R. (See Del. & Hud. Can. Co.)
Rhinebeck & Connecticut. (See Hart. & Ct. Wn.)
Richmond, Fredericksburg & Potomac R. R. 4-9 g. 81 m. 15 lo. 149 cars.
E. T. D. Myers, Gen. Supt....Richmond, Va.
T. L. Courtney, Asst. Supt....Richmond, Va.
H. Kuhn, M. M....Richmond, Va.
W. H. Trainham, M. C. B....Richmond, Va.
Rich., York River & Ches. R. R. (See Rich. & Dan.)
Richmond & Alleghany R. R. 4-9 g. 261 m. 19 lo. 837c.
Decatur Axtell, Rec. & Gen. Man. Richmond, Va.
M. Sweeney, Pur. Agt....Richmond, Va.
Geo. D. Harris, M. M. & C. B....Richmond, Va.
Richmond & Danville R. R. Co.'s Roads. 1,736 miles 218 loco. 3,833 cars.
A. L. Rives, Gen. Man....Richmond, Va.
Peyton Randolph, As. G. Man..Richmond, Va.
J. P. Minetree, Pur. Agt....Richmond, Va.
R. D. Wade, Supt. Mo. Po....Richmond, Va.
(1) Rich. & Dan. R. R. 5 g. 847 m. 131 lo. 2,687 cars.
Rich. & Dan. Div.: 5 g. 320 m. 80 lo. 1,797 c.
Wm. H. Green, Supt....Richmond, Va.
M. M....Richmond, Va.
J. B. Vaughan, For. Car Sh...Richmond, Va.
North Carolina Div. 5 g. 223 m. 22 lo. 268 cars.
A. B. Andrews, Supt....Raleigh, N. C.
W. H. Turrentine, M. M. Comp'y's Shops, N. C.
J. C. Holt, For. Car Sh. Comp'y's Shop, N. C.
Atlanta & Char. Air Line. 5 g. 286 m. 31 lo. 415 c.
Narrow-Gauge Branches. 3 g. 80 m. 5 lo. 41 c.
Edmund Berkley, Supt....Atlanta, Ga.
T. W. Gentry, M. M....Atlanta, Ga.
Z. T. Smith, For. Car Sh....Atlanta, Ga.
(2) Charlotte, Col. & Aug. R. R. 5 g. 239 m. 22 lo. 287 c.
G. R. Talcott, Supt....Columbia, S. C.
J. H. Green, M. M. (2 roads)...Columbia, S. C.
(3) Columbia & Greenville R. R. 5 g. 297 m. 22 l. 224 c.
G. S. Talcott, Supt....Columbia, S. C.
J. O. Meredith, For. E. & C. Rep.... do.
(4) Virginia Midland Ry. 4-8½ g. 353 m. 41 lo. 631 c.
Supt. Alexandria, Va.
H. M. Smith, M. of M....Alexandria, Va.
J. T. Nalls, M. C. B....Alexandria, Va.
Richmond & Petersburg R. R. 4-8½ g. 25 m. 8 lo. 132 c.
J. R. Kenly, Supt....Richmond, Va.

John O'Brien, M. M....Richmond, Va.
Rio Grande R. R. 3-6 g. 22 m. 3 lo. 40 cars.
M. J. Gomila, Rec. & Gen. Man. Brownsville, Tex.
G. W. Rendall, M. M....Brownsville, Tex.
M. Markwood, M. C. B....Brownsville, Tex.
Rio Grande & Pecos Ry. 4-8½ g. 27 m. In progress.
W. W. Hungerford, Man....Laredo, Tex.
Rochester & Lake Ontario Ry. 4-8½ g. 6 m. 2 lo. 10 c.
N. B. Ellison, Man....Rochester, N. Y.
Rochester & Pittsb'g. R. R. 4-8½ g. 260 m. 60 lo. 3,296 c.
Geo. E. Merchant, Gen. Man...Rochester, N. Y.
J. T. Gardiner, Gen. Supt....Buffalo, N. Y.
C. W. Mills, Supt. M. P....Rochester, N. Y.
Rock Island & Mercer County R. R., and
Rock I'd & Peoria Ry. 4-8½ g. 113 m. 13 lo. 357 c.
R. R. Cable, V.-P. & Gen. Supt....Chicago, Ill.
R. I. & P. Ry.:
H. B. Sudlow, Supt. & P. A....Rock Island, Ill.
Joseph Elder, M. M....Peoria, Ill.
R. I. & M. C. Rd.: H. B. Sudlow, Supt. R'k Island, Ill.
J. H. Parks, M. M....Rock Island, Ill.
Rogersville & Jefferson R. R. 5 g. 16 m. 1 lo. 6 cars.
C. M. Leuty, Supt....Rogersville, Tenn.
Rome (Ga.) R. R. 5 g. 20 m. 2 lo. 17 cars.
Eben Hillyer, Pres. & Supt....Rome, Ga.
O. W. Harbin, M. M....Rome, Ga.
Rome, Watertown & Ogdensburg R. R. 4-8½ g. 418 m. 61 lo. 1,831 cars.
H. M. Britton, Gen. Man. & P. A. Oswego, N. Y.
Geo. H. Haselton, S. M. P. & M. Oswego, N. Y.
E'n Div.: J. D. Remington, A. Supt. Watertown, N. Y.
W'n Div.: W. H. Chauncey, A. Supt. Oswego, N. Y.
Roodhouse & Scottsville Ry. In progress.
Geo. P. Merrill, Gen. Man....Chicago, Ill.
Ruby Hill R. R. (See Eureka & Pal.)
Rumford Falls & Buckfield R. R. 4-8½ g. 29 m. 2 l. 62 c.
L. L. Lincoln, Supt. & Pur. Agt...Canton, Me.

S

Sabine & East Texas Ry. (See Cen. Pac.)
Sacramento & Placerville R. R. (See Cen. Pac.)
Saginaw Bay & Northw'n R. R. 4-8½ g. 31 m. 6 lo. 136 c.
J. Jackson, Gen. Man....Pinconning, Mich.
F. T. Lillote, Act. Pur. Agt...Pinconning, Mich.
Edward Keeler, M. M....Pinconning, Mich.
Saginaw, Tuscola & Huron R. R. 3 g. 50 m. 5 lo. 85 cars.
M. B. Wilkinson, Gen. Supt..E. Saginaw, Mich.
Saginaw Valley & St. Louis R. R. 4-8½ g. 39 m. 4 l. 64 c.
T. M. Fish, Gen. Supt....Ionia, Mich.
N. W. Merrill, Div. Supt....Saginaw, Mich.
Allan Bourn, Pur. Agt....Detroit, Mich.
Geo. C. Watrous, M. M....Ionia, Mich.
Salt Lake & Western R. R. (See Un. Pac.; (6) Div.)
San Francisco & No. Pac. 4-8½ g. 139 m. 11 lo. 245 c.
Arthur Hughes, Gen. Man..San Francisco, Cal.
H. C. Whiting, Supt....San Rafael, Cal.
Ed. Reynolds, Gen. M. M....Donahue, Cal.
Ed. Reynolds, M. C. B....Donahue, Cal.
Sanborn, Cooperstown & Turtle M. R. R. In progress.
C. A. Roberts, Gen. Man....Sanborn, Dak.
Sandy River R. R. 2 g. 18 m. 3 lo. 36 cars.
N. B. Beal, Pres. & Supt....Phillips, Me.
M. Saunders, M. M. & C. B....Phillips, Me.
Sandusky, Mansfield & Newark R. R. (See B. & O.)
Sanford & Indian River R. R. (See So. Flor.)
San Luis Obispo & Santa Maria R. R. 3 g. 20 m. 2 lo. 30 cars.
Charles Goodall, Man....San Francisco, Cal.
San Pete Valley R. R. 3 g. 33 m. 2 lo. 57 cars.
S. Bamberger, Man....Salt Lake City, U. T.
J. E. Bamberger, Pur. Agt....Salt Lake, U. T.
B. Bates, M. M....Morvin, U. T.
Santa Cruz R. R. (See So. Pac.; Nor'n Div.)
Saratoga, Mt. McGregor & Lake George R. R. 3 g. 11 m. 3 lo. 12 cars.
John McGee, Supt....Saratoga Springs, N. Y.
Savannah, Florida & W'n Ry. 5 g. 519 m. 62 lo. 1,063 c.
H. S. Haines, Gen. Man....Savannah, Ga.
R. G. Fleming, Supt....Savannah, Ga.
A. A. Aveilhé, Pur. Agt....Savannah, Ga.
G. M. D. Riley, M. of Mach....Savannah, Ga.
E. Geffcken, For. Car Dept....Savannah, Ga.
Sav., Griffin & No. Ala. R. R. Op. by Central (Ga.).
Schuylkill & Lehigh R. R. (See Phil. & Read.)
Scoharie Valley R. R. (See Middleburg & Sch.)
Scioto Valley R. R. 4-8¾ g. 132 m. 19 lo. 548 cars.
Geo. Skinner, Supt. & P. Agt....Columbus, O.
R. Bromley, M. M....Portsmouth, O.
Seaboard & Roanoke R. R. 4-8½ g. 80 m. 21 lo. 384 c.
L. T. Myers, Supt....Portsmouth, Va.
J. A. Walton, Pur. Agt....Portsmouth, Va.
M. M. Pendleton, S. M. P. & M. Portsmouth, Va.
Sedalia, Warsaw & Southern Ry. (See Mo. Pac.)
Sharpsville R. R. 4-8½ g. 23 m. 3 lo. 13 cars.
Thos. M. King, V. P. & Gen. Man. Pittsburgh, Pa.
W. C. Agnew, Asst. Gen. Man..Youngstown, O.
Shelby Iron Co. R. R. { 5-9 g. 7 m. 2 lo. / 3-6 g. 12 m. 3 lo. } 50 c.
J. A. McArthur, G. Man..Shelby Ir. Wks, Ala.
R. H. Stoughton, Supt..Shelby Iron Wks., Ala.
J. H. Burghardt, M. M..Shelby Iron Wks, Ala.
Shell Beach R. R. 5 g. 22 m.
M. R. Spelman, Supt....New Orleans, La.
Shenandoah Valley R. R. 4-9 g. 249 m. 32 lo. 849 c.
Norfolk & Western R. R. 5 g. 486 m. 82 lo. 1,779 c.
D. W. Flickwir, Gen. Supt....Roanoke, Va.
W. C. De Armond, Pur. Agt...Philadelphia, Pa.
Supt. of M. P....Roanoke, Va.
W. A. Morgan, M. C. B....Lynchburg, Va.
Sh. Val. Rd.: D. W. Flickwir, Supt., Roanoke, Va.
N. & W.; W. Div.: Frank Huger, Supt.; and
N. & W.; E. Div.: N. M. Osborne, Supt.; and
J. T. Robinett, M. M....Petersburg, Va.
Shenango & Allegheny R. R. 4-8½ g. 74 m. 8 lo. 248 c.
J. T. Blair, G. Man. & Pur. Agt. Greenville, Pa.
Edw. Richardson, M. M. & C. B. Greenville, Pa.
Shepaug R. R. 4-8½ g. 38 m. 3 lo. 28 cars.
Edwin McNeill, Supt....Litchfield, Ct.
A. J. Broughet, M. M....Litchfield, Ct.
Ship Is., Ripley & Ky. R. R. 3 g. 25 m. 2 lo. 23 cars.
C. L. Harris, Supt. & Pur. Agt....Ripley, Miss.
W. H. Phelps, M. M....Ripley, Miss.
Silver City, Deming & Pacific R. R. 3 g. 47 m. 3 l. 141 c.
John W. Smith, Gen. Supt....Silver City, N. M.
Silver Lake Ry. 4-8½ g. 6 m. 1 lo. 4 cars
C. W. S. Nobles, Supt....Perry, N. Y.
Sinaloa & Durango R. R. 4-8½ g. 39 m. 2 lo. 40 cars.
Geo. S. Skilton, Gen. S. Culiacan, Sinaloa, Mex.
John E. Bell, M. M....Culiacan, Mex.
Skaneateles R. R. 4-8½ g. 5 m. 2 lo. 5 cars.
J. McNamara, Supt....Skaneateles, N. Y.
Sioux City & Pacific R. R. 4-8½ g. 427 m. 31 lo. 893 c.
W. P. Linsley, Gen. Man....Missouri Valley, Ia.
C. M. Lawler, Gen. Supt....Missouri Valley, Ia.
R. W. Hamer, Pur. Agt....Chicago, Ill.
W. G. Brownson, Asst. Supt....Norfolk, Neb.
S. A. Teal, M. M....Missouri Valley, Ia.
W. H. Ramseyer, M. C. B...Missouri Valley, Ia.
Smyrna & Delaware Bay R. R. (See Kent County.)
Sodus Bay Ry. (See Northern Central.)
Somerset R. R. 4-8½ g. 25 m. 3 lo. 24 cars.
W. M. Ayer, Supt. & Pur. Agt....Oakland, Me.
S. P. Mosher, For. Car Rep....Oakland, Me.
C. Crowell, For. Lo. Rep's....No. Anson, Me.
Somerset & Cambria R. R. (See B. & O.)
Sonora Ry. (See A., T. & S. Fe.)
Sonoma Valley:
Arthur Hughes, Gen. Man. San Francisco, Cal.
H. C. Whiting, Supt....San Rafael, Cal.
J. T. Peters, Asst. Supt....Glen Ellen, Cal.
Ed. Reynolds, M. M....Donahue, Cal.
South & North Alabama R. R. (See Louis. & Nash.)
South Carolina Ry. 5 g. 246 m. 46 lo. 834 cars.
John B. Peck, Gen. Man....Charleston, S. C.
S. B. Pickens, Pur. Agt....Charleston, S. C.
P. J. Cochrane, Mast. of Mach. Charleston, S. C.
Geo. H. Gramling, M. C. B....Charleston, S. C.
South-Eastern Ry. 4-8½ g. 280 m. 30 lo. 1,000 cars.
T. A. McKinnon, Gen. Man....Montreal, Can.
A. G. Eastman, M. M....Farnham, P. Q.
South Florida R. R. 3 gauge 115 m. 13 lo. 250 cars.
B. R. Swoope, Supt. & P. A....Sanford, Fla.
R. Derby, M. M....Sanford, Fla.
A. D. Stentiford, M. C. B....Sanford, Fla.
South Mountain R. R. 4-8½ g. 18 m. 4 lo. 22 c.
W. H. Woodward, Supt. Pine G've Furnace, Pa.
South Pacific Coast R. R. 3 g. 81 m. 16 lo. 500 cars.
L. Fillmore, Gen. Supt....San Francisco, Cal.
W. H. Masterman, M. M. & C. B..Newark, Cal.

South-Western R. R. (Ga.) *(See Central of Ga.)*
South-Western Ry. (Ky.) 4-8½ g. 5 m. 1 lo. 28 cars.
M. Tabler, *Supt. & Man.*.....Harrodsburg, Ky.
J. C. Hool, *Pur. Agt.*.....Harrodsburg, Ky.
Southern Central R. R. 4-8½ g. 156 m. 21 lo. 407 c.
H. D. Titus, *Gen. Supt. & P. A.*.....Auburn, N. Y.
John White, *M. M.*.....Auburn, N. Y.
H. Mooney, *M. C. B.*.....Auburn, N. Y.
Southern Kansas Ry. *(See Atl., Top. & Santa Fe.)*
Southern Maryland R. R. 4-8½ g. 20 m. 1 lo. 20 c.
J. B. Ridgway, *Supt.*.....Brandywine, Md.
C. R. Joyce, *M. M.*.....Brandywine, Md.
Southern Pacific R. R. 4-8½ g. 203 m. 335 lo. 780 c.
Northern Div. *(For other Divs. see Cen. Pac.)*
A. C. Bassett, *Supt.*.....San Francisco, Cal.
J. R. Watson, *Pur. Agt.*.....Sacramento, Cal.
J. T. Wilson, *M. M.*.....San Francisco, Cal.
F. N. Bellisle, *M. C. B.*.....San Francisco, Cal.
Southern Pacific R. R. of Arizona. *(See Cen. Pac.)*
Southern Pacific R. R. of New Mexico. *(See Cen. Pac.)*
Spartanburg, Union & Columbia R. R.
(See Rich. & Dan.; (3) Div.
Spring Brook R. R. 4-8 g. 8 m. 1 lo. 15 cars.
Charles Pugh, *Pres.*.....Pittston, Pa.
Spring Hill & Parrsboro Ry. *(See Cumberland.)*
Springfield, Effingham & So. E'n Ry. *(See Ind. & Ill.)*
Springville & Sardinia Ry. 4-8½ g. 15 m. 1 lo. 8 c.
Bertrand Chaffee, *Pres.*.....Springville, N. Y.
St. Croix & Penobscot R. R. 4-8½ g. 22 m. 4 lo. 195 c.
S. W. Haycock, *Supt. & Pur. Agt.*.....Calais, Me.
G. H. Corsen, *M. M.*.....Milltown, Me.
H. C. Tucker, *M. C. B.*.....Milltown, Me.
St. Helen, Houghton Lake & West. R. R. 4-8½ g. 13 m.
Z. C. Jessop, *Gen. Man.*.....Detroit, Mich.
St. John & Maine Ry. *(See New Brunswick.)*
St. John's Ry. 4-8½ g. 143 m. 3 lo. 34 cars.
R. McLaughlin, *Pr. & Supt.*.....Jacksonville, F'a.
J. M. Cowan, *M. of Mach.*.....St. Augustine, Fla.
St. John's & Lake Eustis Ry. *(See Florida Southern.)*
St. Johnsbury & Lake Champ 4-8½ g. 120 m. 15 lo. 372 c.
A. B. Jewett, *Supt. & P. A.*.....St. Johnsbury, Vt.
Geo. E. Howe, *M. of C. B.*.....St. Johnsbury, Vt.
St. Joseph Valley R. R. 3 g. 15 m. 1 lo. 11 cars.
E. T. Chase, *Gen. Man.*.....Berrien Springs, Mich.
St. Joseph & Des Moines Ry. 3 g. 13 m. 4 lo. 70 cars.
T. T. Onderdonk, *Supt.*.....Bonne Terre, Mo.
St. Joseph & Western R. R.
4-8½ g. 232m. 21 lo. 175 cars.
L. D. Tutnill, *Gen. Supt. & P. A.*.....St. Joseph, Mo.
E. Sleepy, *M. M. & C. B.*.....St. Joseph, Mo.
St. Joseph & Des Moines R. R. *(See K. C., St. J. & C. B.)*
St. Lawrence & Ottawa Ry. *(See Can. Pac.)*
St. Louis, Alton & Terre Haute R. R.
Main Line. *(See C., C., C. & I.; Ind. & St. L. Div.*
St. Louis & Cairo Div.; 4-8½ g. 137 m. 19 lo. 800 c.
G. W. Parker, *Gen. Man.*.....St. Louis, Mo.
J. L. Hinckley, *Supt.*.....Belleville, Ill.
R. M. Pringle, *M. M.*.....E. St. Louis, Ill.
St. Louis Bridge Co. and Tunnel R. R.
4-8½ g. 31 m. 22 lo. 11 cars.
Wm. Taussig, *Gen. Man.*.....St. Louis, Mo.
A. W. Dickinson, *Supt.*.....St. Louis, Mo.
J. E. Williams, Jr., *Pur. Agt.*.....St. Louis, Mo.
Geo. W. Walshe, *M. M. P.*.....St. Louis, Mo.
St. Louis, C. Cœur & St. Ch. Ry.
F. M. Colburn, *Gen. Man.*.....St. Louis, Mo.
St. Louis Coal R. R. 4-8½ g. 93 m. 10 lo. 217 cars.
Robt. Meek, *Supt.*.....Carbondale, Ill.
Jas. C. Bryden, *Pur. Agt.*.....St. Louis, Mo.
St. Louis, Des Moines & Northern Ry. 4-8½ g. 43 m
C. F. Merk, *Supt.*.....Des Moines, Ia.
St. L., Ft. Scott & Wichita R. R. 4-8½ g. 214 m. 61.337 c.
J. W. Miller, *V. P. & Gen. Man.*.....Fort Scott, Kan.
Thos. N. Lewis, *Asst. Supt.*.....Fort Scott, Kan.
Henry Berger, *M. M.*.....Ft. Scott, Kan.
St. L., Hannibal & Keokuk. 4-8½ g. 85 m. 5 lo. 70 c.
E. C. Case, *Exc. & Man.*.....Hannibal, Mo.
E. W. Hoisington, *M. M.*.....Hannibal, Mo.
St. Louis, Iron Mt. & So'n Ry. *(See Mo. Pac.; (4) Div.)*
St. L., Keokuk & N. W. R. *(See C., R. & Q.)*
St. L., Salem & Little Rock. 4-0 g. 72 m. 3 lo. 111 c.
H. A. Crawford, *V. Pr. & P. A.*.....St. Louis, Mo.
E. B. Sankey, *Supt.*.....Salem, Mo.
Thomas Everson, *M. M.*.....Steelville, Mo.
J. W. Houston, *M. C. B.*.....Steelville, Mo.
St. Louis & Cairo R. R. 3 g. 152 m. 22 lo. 806 cars.
Chas. Hamilton, *Gen. Supt.*.....St. Louis, Mo.
T. W. Newell, *M. M.*.....E. St. Louis, Mo.
St. L. & San Fran. Ry. 4-8½ g. 943 m. 103 lo. 3,737 c.
C. W. Rogers, *V. P. & Gen. Man.*.....St. Louis, Mo.
D. H. Nichols, *Supt. Tran.*.....No. Springfield, Mo.
A. P. Mann, Jr., *Pur. Agt.*.....St. Louis, Mo.
M. Kearney, *M. M. & C. B.*.....No. Springfield, Mo.
East Div.: A. Veech, *Supt.*.....St. Louis, Mo.
Central Div.: W. A. Thoms, *Supt.*.....Springfield, Mo.
Kan. Div.: J. R. Wentworth, *Supt.*.....Neosho, Mo.
St. Martin's & Upham Ry. 4-8½ g. 30 m. 2 lo. 8 cars.
A. E. Killam, *Manager*.....St. Martin's, N. B.
St. Paul Baxter's Grand Rapids & Western Ry. 4-8½ g. 15 m.
D. C. Lamb, *Gen. Supt.*.....Oconto, Wis.
St. Paul, Minneapolis & Manitoba Ry.
4-8½ g. 1,407 m. 301 lo. 5,008 cars.
A. Manvel, *Gen. Man.*.....St. Paul, Minn.
H. C. Ives, *Asst. Gen. Man.*.....St. Paul, Minn.
E. B. Wakeman, *Asst. Gen. Supt.*.....St. Paul, Minn.
J. C. Morrison, *Pur. Agt.*.....St. Paul, Minn.
Thos. Downing, *M. M. & C. B.*.....St. Paul, Minn.
Brecx. Div.: W. S. Kemp, *Supt.*.....St. Paul, Minn.
S. F. Div.: J. B. Race, *Supt.*.....St. Paul, Minn.
No'n Div.: A. Guthrie, *Supt.*.....Crookston, Minn.
St. Paul & Duluth R. R. 4-8½ g. 225 m. 37 lo. 1,080 c.
W. H. Fisher, *Gen. Supt.*.....St. Paul, Minn.
J. G. Callahan, *Pur. Agt.*.....St. Paul, Minn.
Chas. F. Ward, *M. M. & M. C. B.*.....St. Paul, Minn.
State Line & Sullivan R. R. 4-8½ g. 25 m. 3 lo. 263 c.
I. O. Blight, *Supt.*.....Towanda, Pa.
Staten Island R. R. ¾ g. 13 m. 4 lo. 18 c
J. W. Wilbur, *Supt.*.....New York, N. Y
Stony Clove & Catskill Mountain R. R.
3 g. 14 m. 2 lo. 22 cars.
Geo. Coykendall, *Gen. Supt.*.....Rondout, N. Y
Stony Creek R. R. 4-8½ g. 103 m.
Geo. B. Boggs, *Supt.*.....Norristown, Pa.
Sterling Mountain Ry. 6 g. 8 m. 2 lo. 145 cars
J. C. Missimer, *Supt.*.....Sloatsburg, N. Y.
Suffolk Lumber R. R. 3 g. 15 m. 3 lo. 41 cars.
W. H. Wailey, *Supt.*.....Suffolk, Va.
Summit Branch R. R. 4-0 g. 20 m. 7 lo. 10 cars.
Thomas Gucker, *Supt.*.....Williamsport, Pa.
Susquehanna & Delaware River R. R. in progress.
D. Y. Kilgore, *Pres.*.....Philadelphia, Pa.
Sussex R. R. *(See Del., Lack. & West.)*
Syracuse, Binghamton & N. Y. R. R. *(See D. L. & W.)*
Syr., Ontario & N. Y. R. R.
Albert Allen, *Supt.*.....New York, N. Y
Syracuse, Geneva & Corning; Corning, Cowanasque & Antrim R. Rs. 4-8½ g. 142 m. 28 lo. 1,044 c.
A. H. Gorton, *Supt.*.....Corning, N. Y.
W. E. Gorton, *Asst. Supt.*.....Corning, N. Y.
W. H. Chapin, *Pur. Agt.*.....Corning, N. Y.
O. C. Patchell, *M. M.*.....Corning, N. Y.
C. J. Butler, *M. C. B.*.....Corning, N. Y.

T

Tennessee Coal R. R. 5 g. 28 m. 8 lo. 204 cars.
A. M. Shook, *Gen. Man.*.....Tracy City, Tenn.
W. A. Knight, *M. M.*.....Tracy City, Tenn.
Tennessee & Sequatchee Valley R. R.
3 g. 42 m. 1 lo. 24 cars.
Chas. Clinton, *Gen. Supt.*.....Spring City, Tenn.
P. V. Mooney, *Pur. Agt.*.....Spring City, Tenn.
Terre Haute & Indianapolis R. R.
4-0 g. 421 m. 105 lo. 4,318 cars.
Joseph Hill, *Gen. Supt.*.....St. Louis, Mo.
C. R. Peddle, *P. Agt.*.....Terre Haute, Ind.
Geo. H. Prescott, *S. M. P. & M.*.....Terre Haute, Ind.
F. C. Cleaver, *M. M.*.....Terre Haute, Ind
E. D. Carter, *M. C. B.*.....Terre Haute, Ind.
Chas. Sandiford, *M. M.*.....Effingham, Ill.
Clinton Idler, *Foreman*.....Indianapolis, Ind.
Terre Haute & So.-Eastern Ry. 4-0 g. 44 m. 2 lo. 145 c.
Geo. Atherton, *Supt.*.....Terre Haute, Ind.
Texas-Mexican Ry. *(See Mex. Nat.)*
Texas Trunk R. R. 4-8½ g. 36 m. 2 lo. 8 cars.
Hugh Irwin, *Gen. Supt.*.....Dallas, Tex.
Texas Western Ry. 3 g. 52 m. 2 lo. 44 cars.
Henry Hatch, *Gen. Man.*.....Houston, Tex.
T. F. Gilspin, *M. M.*.....Houston, Tex.
Texas & N. O. R. R. *(See Cen. Pac.; G. H. & S. A. Div.)*
Texas & Pacific. *(See Mo. Pac. Ry.; (6) Div.)*
Texas & St. Louis Ry. 3 g. 709 m. 84 lo. 2,000 cars.
W. R. Woodard, *Rec. and Gen. Man.*.....St. Louis, Mo.
J. J. Frey, *Gen. Supt.*.....Pine Bluff, Ark.
C. S. Brooke, *Pur. Agt.*.....St. Louis, Mo.
M. B. Jones, *M. C. B.*.....Pine Bluff, Ark.
Mo. & Ark. Div.:
W. H. Adams, *Supt.*.....Pine Bluff, Ark.
Rich. Williams, *M. M.*.....Pine Bluff, Ark.
Tex. Div.: H. Flanders, *Supt.*.....Tyler, Tex.
P. J. Milan, *Gen. M. M.*.....Pine Bluff, Ark.
onesta Valley R. R. 3 g. 15 m.
George Dickinson, *Gen. Supt.*.....Sheffield, Pa.
Toga R. R. 4-8½ and 6 g. 67 m. 18 lo. 960 cars
L. H. Shattuck, *Supt.*.....Toledo, O.
J. C. Guthrie, *Pur. Agt.*.....Blossburg, Pa.
Pero Bonny, *M. M.*.....Blossburg, Pa.
B. H. Strang, *M. C. B.*.....Blossburg, Pa.
Toledo, Ann Arbor & No. Mi h. Ry.
4-8½ g. 63 m. 9 lo. 186 c.
J. M. Ashley, *Gen. Man.*.....Ann Arbor, Mich.
H. W. Ashley, *Supt. & Pur. Agt.*.....do
C. C. Dodge, *M. M.*.....Ann Arbor, Mich.
Toledo, Cin. & St. Louis R. R. 3 g. 708 m. 101 lo. 3,500 c.
E. F. Murray, *Gen. Supt.*.....Toledo, O.
F. W. Stewart, *P. Agt.*.....Toledo, O.
Thos. Robertson, *M. M.*.....Delphos, O.
Toledo Div.: H. Vandergrift, *Supt.*.....do
J. S. Wiers, *For. Car Rec.*.....Delphos, O.
St. Louis Div.: Frank F. Allen.....Charleston, Ill.
Wm. Murphy, *M. M.*.....Charleston, Ill.
Toledo & Indianapolis R. R. 4-8½ g. 43 m. 4 lo. 1 c.
David Robison, Jr., *Rec.*.....Toledo, O.
Toledo, Peoria & Western R. R. *(See Peo. Pac.)*
Tonawanda Val. & Cuba R. R. *(See Buffalo, R. & P.)*
Toronto, Grey & Bruce Ry. *(See Canadian Pacific.)*
Toronto & Nipissing Ry. *(See Mid. Ry. of Can.)*
Troy & Boston R. R. 4-8½ g. 48 m. 20 lo. 484 cars.
D. Robinson, *Pres.*.....Troy, N. Y.
Joseph Cranitell, *Supt.*.....Troy, N. Y.
C. H. Hubbell, *Pur. Agt.*.....Troy, N. Y.
Z. B. Davis, *M. M.*.....Troy, N. Y.
J. Brewer, *M. C. B.*.....Troy, N. Y.
Troy & Greenfield R. R. & H. Tunnel. 4-8½ g. 44 m.
A. W. Locke, *Man.*.....North Adams, Mass.
Tuckerton R. R. 4-0 g. 31 m. 2 lo. 29 cars
J. J. Pharo, *Supt. & Pur. Agt.*.....Tuckerton, N. J.

U

Ulster & Delaware R. R. 4-8½ g. 74 m. 10 lo. 218 cars.
Jas. H. Jones, *Supt.*.....Rondout, N. Y.
John H. Decker, *M. C. B.*.....Rondout, N. Y.
Union Ry. 5 g. 9 m. 3 lo.
C. E. James, *Pres.*.....Chattanooga, Tenn.
D. J. O'Connell, *Gen. Man.*.....Chattanooga, Tenn.
Union Pacific Ry. (7 Gen. Divs.)
3 g. 2,433 m. 310 lo. 10,550 cars.
S. R. Callaway, *Gen. Man.*.....Omaha, Neb.
S. T. Smith, *Gen. Supt.*.....Omaha, Neb.
Thos. L. Kimball, *Asst. Gen. Man.*.....Omaha, Neb.
Pur. Agt......Omaha, Neb.
I. H. Congdon, *S. M. P. & C. D.*.....Omaha, Neb.
John Wilson, *Asst. do*.....Omaha, Neb.
(1) Neb. Div.: G. H. France, *Gen. Supt.*.....Omaha, Neb.
E. Div.: C. B. Havens, *Supt.*.....Omaha, Neb.
M. M......Omaha, Neb.
A. M. Collett, *M. C. B.*.....Omaha, Neb.
Pac. Div.: W. A. Deuel, *Supt.*.....Cheyenne, W. T.
J. H. McConnell, *M. M.*.....N. Platte, Neb.
(2) Wy. Div.: Jas. Dickens, *Gen. Supt.*.....Laramie, W. T.
T. A. Davis, *M. M.*.....Laramie, W. T.
Wes. Div.: C. E. Wurtelle, *Supt.*.....Evanston, W. T.
Geo. Chapman, *M. M.*.....Evanston, W. T.
(3) Idaho Div.: R. Blickenderfer, *Gen. Supt.*.....Ogden, U.
F. Reardon, *M. M.*.....Shoshone, Id.
Ogden Short Line & Ft. D. Div.:
R. Blickensderfer, *Supt.*.....Pocatello, Id.
Utah & Northern Div.:
J. S. Bailey, *M. M.*.....Eagle Rock, Id
J. W. Paul, *Gen. Pur. C. D.*.....Eagle Rock, Id
4) Col. Cent. Div.: A. A. Egbert, *Gen. Supt.*.....Denver, Col.
C. Meiritsheimer, *M. M.*.....Denver, Col.
C. C. Div.: P. Touhy, *Supt.*.....Denver, Col
So. Park Div.: J. T. Choate, *A. Supt.*.....Denver, Col.
(5) Kan. Div.: H. O. Brinkerhoff, *G. Supt.*.....Kan. City, Mo.
Kan. Pac. Div.: J. O. Brinkerhoff, *Supt.*.....Kan. C'y, Mo.
J. O. Chapman, *M. M.*.....Armstrong, Kan.
T. B. Roberts, *M. C. B.*.....Armstrong, Kan.
Kansas Central Div.:
J. O. Brinkerhoff, *Supt.*.....Leavenworth, Kan.
Smoky Hill Div.:
W. D. Spruce, *Supt.*.....Wallace, Kan.
J. B. Dailey, *M. M.*.....Ellis, Kan.
6 Salt Lake & Western Div.:
Robert Stout.....Salt Lake City, Utah.
7) Nevada Central Ry. 3 g. 93 m. 4 lo. 76 cars.
Jos. K. Choate, *Gen. Supt. & P. A.*.....Battle Mt., Nev.
United States Rolling Stock Co. 19 lo. 4,092 cars.
A. Hopewisch, *Pres.*.....New York, N. Y.
W. H. Chaddock, *Gen. Agt.*.....Chicago, Ill.
Upson County R. R. *(See Central of Ga.)*
Utah Central Ry. 4-8½ g. 280 m. 21 lo. 358 cars.
John Sharp, *Gen. Supt.*.....Salt Lake City, Utah.
S. H. Hill, *Pur. Agt.*.....Salt Lake City, Utah.
(Geo. G. Rytander, *M.*.....Salt Lake City, Utah.
Peter Reid, *M. C. B.*.....Salt Lake City, Utah.
Utah & Nevada Ry. 3 g. 37 m. 3 lo. 33 cars
W. W. Ritter, *Gen. Man.*.....Salt Lake City, Utah.
Robert Anderson, *M. M.*.....Salt Lake City, Utah.
Utah & Northern Ry. *(See Union Pac.; (3) Div.)*
Utah & Pleasant Valley Ry. *(See Den. & Rio. Gr.)*
Utica, & Black Riv. R. R. 4-8½ g. 180 m. 25 lo. 412 c.
E. A. Van Horne, *Gen. Supt. & P. A.*.....Utica, N. Y.
H. W. Hammond, *Asst. Supt.*.....Utica, N. Y.
John Bailey, *M. M.*.....Utica, N. Y.
David James, *M. C. B.*.....Utica, N. Y.

V

Vaca Vall. & Clear Lake R. R. 4-8½ g. 30 m. 2 lo. 19 c.
G. H. Stevenson, *Gen. Supt.*.....Vacaville, Cal.
Valley Ry. (Ohio) 4-8½ g. 85 m. 21 lo. 889 cars
Isaac Reynolds, *Gen. Man.*.....Cleveland, O.
H. Melcher, *Pur. Agt.*.....Cleveland, O.
C. T. Johns, *M. M.*.....Cleveland, O.
Valley R. R. Va. 4-8½ g. 62 m
W. H. Myers, *Pres.*.....Baltimore, Md.
Vermont Valley R. R. *(See Conn. River.)*
Vicksburg & Brunswick R. R. *(See Cen. of Ga.)*
Vicksburg, Shreveport & Pac. R. R. *(See O., N. O. & T. P.)*
Victoria Ry. *(See Midland Ry. of Can.)*
Virginia Midland Ry. *(See Rich. & Dan.; (4) Div.)*
Virginia & Truckee R. R. 4-8½ g. 52 m. 14 lo. 322 c.
Carson & Colorado R. R. 3 g. 294 m. 8 lo. 228 c.
H. M. Yerington, *Gen. Supt.*.....Carson, Nev.
R. J. Lawton, *Supt. C. & Col.*.....Hawthorne, Nev.
Hung Yerington, *Pur. Agt.*.....Carson, Nev.
L. N. Fording, *M. M.*.....Carson, Nev.
M. M. Hyde, *M. C. B.*.....Carson, Nev.

W

Wabash, Chester & W'n R. R. *(See St. Louis Coal.)*
Wabash, St. Louis & Pacific Ry. (4 Gen. Divs.)
4-8½ g. 3,341 m. 598 lo. 17,230 cars.
Jas. F. Joy, *Pres.*.....St. Louis; Mo.
A. L. Hopkins, *V. P.*.....St. Louis, Mo.
A. A. Talmage, *Gen. Man.*.....St. Louis, Mo.
H. H. Wolfolan, *Pur. Agt.*.....St. Louis, Mo.
Jacob Johann, *Supt. M. P. & M.*.....Springfield, Ill.
M. M. Martin, *Supt. Car Dept.*.....Decatur, Ill.
(1) East'n Div.: O. W. Stevens, *Supt.*.....Peru, Ind.
J. B. Barnes, *M. M.*.....Fort Wayne, Ind.
A. W. Quackenbush, *Asst. M. M.*.....Peru, Ind.
Thos. Anderson, *M. C. B.*.....Peru, Ind.
Cairo Div.: C. F. Lape, *M. M.*.....Mt. Carmel, Ill.
Rant'l Div.: B. F. Mathias, *Asst. Supt.*.....Rantoul, Ill.
C. W. Hollister, *Gen. Pur.*.....Rantoul, Ill.
(2) Middle Div.: E. N. Armstrong, *Supt.*.....Decatur, Ill.
Theo. Bergold, *M. M.*.....Springfield, Ill.
H. B. Fox, *M. C. B.*.....Decatur, Ill.
G. A. Hurd, *Asst. Supt.*.....Decatur, Ill.
E. B. Hyde, *Asst. Supt.*.....Havana, Ill.
(3) Western Div.: H. G. Butler, *Supt.*.....Moberly, Mo
W. J. Brokaw, *M. M.*.....Moberly, Mo.
C. S. Buck, *M. C. B.*.....Moberly, Mo.
John Long, *A. Supt. C. D.*.....Moberly, Mo.
D. Moin, Div.: C. F. Meek, *A. Supt.*.....Des Moines, Ia.
Walden's Bridge R. R. 3 g. 23 m. 3 lo. 37 cars.
John G. Scott, *Gen. Man.*.....Jenks P. O., Tenn.
Wallkill Valley
J. E. Childs, *Gen. Supt.*.....New York, N. Y.
Geo. H. Graves, *Supt.*.....Kingston, N. Y.
E. Minshull, *M. M.*.....Middletown, N. Y.
I. W. Fowler, *Pur. Agt.*.....Middletown, N. Y.
Walla Walla & Columbia Riv. R. *(See O. R. & N.)*
Walton R. R. 5 g. 10 m. 1 lo. 7 cars.
Joseph H. Walker, *Pres.*.....Monroe, Ga.
Warren & Farnsworth Valley R. R.
3 g. 16 m. 3 lo. 39 cars.
A. D. Wood, *Gen. Man.*.....Warren, Pa.
Warwick Valley R. R. *(See Leh. & Hud. River.)*
Wasatch & Jordan Valley R. R. *(See Den. & Rio. Gr.)*
Washington, Ohio & West. R. R. 4-8½ g. 52 m. 5 lo. 87 c.
S. M. Brophy, *Supt.*.....Alexandria, Va.
W. Mountjoy, *Act. For.*.....Alexandria, Va.
John Harrison, *M. C. B.*.....Alexandria, Va.
Waynesburg & Washington Rd. 3 g. 29 m. 3 lo. 26 c.
C. E. Bowers, *Supt.*.....Warnesburg, Pa.
A. M. Kline, *M. C. B.*.....Waynesburg, Pa.
Welland Ry. 4-8½ g. 25 m. 4 lo. 147 cars.
William Pay, *Supt.*.....St. Catharines, Ont.
Jas. Taylor, *M. M.*.....St. Catharines, Ont.
Wm. H. Pay, *M. C. B.*.....St. Catharines, Ont.
West Feliciana R. R. 4-8½ g. 27 m. 2 lo. 22 cars
J. B. McGehee, *Pr. & Gen. Supt.*.....Bayou Sara, La.
J. A. Tilton, *M. M. & C. B.*.....Bayou Sara, La.
W. Va., Central & Pittsb'g Ry. 4-8½ g. 50 m. 4 lo. 119 c.
C. D. Wilson, *Gen. Man.*.....Piedmont, W. Va.
W. E. Porter, *Gen. Supt.*.....Piedmont, W. Va.
Geo. W. Harrison, *Pur. Agt.*.....Piedmont, W. Va.
E. W. Lippencott, *M. M.*.....Piedmont, W. Va.
West & East R. R. *(See Ill. Cen.; N. O. Div.)*
West Jersey R. R. *(See Penn. R. R.; (3) Div.)*
Western R. R. (of Ala.) 3 g. 85 m. 3 lo. 270 cars.
Atlanta & W. Point Rd. 5 g. 87 m. 14 lo. 240 c.
Cecil Gabbett, *Gen. Man. & Supt.*.....Mont., Ala.
C. D. Wall, *M. M. & C. B.*.....Montgomery, Ala.
Western Counties Ry. 4-8½ g. 67 m. 8 lo. 137 cars.
J. Brignell, *Supt.*.....Yarmouth, N. S.
Western Maryland R. R. 4-8½ g. 127 m. 28 lo. 610 c.
J. M. Hood, *Pr. & Gen. Man.*.....Baltimore, Md.
R. J. Adair, *Pur. Agt.*.....Baltimore, Md.
David Helts, *Mast. of Mach.*.....Union Bridge, Md.
J. H. Nussear, *M. C. B.*.....Union Bridge, Md.
Western No. Carolina R. R. 5 g. 210 m. 17 lo. 160 c.
V. E. McBee, *Supt.*.....Salisbury, N. C.
Jos. F. Minetree, *Pur. Agt.*.....Richmond, Va.
G. W. Gates, *M. M.*.....Salisbury, N. C.
Western & Atlantic R. R. 5 g. 138 m. 58 lo. 952 c.
R. A. Anderson, *Gen. Supt.*.....Atlanta, Ga.
A. B. Bostwick, *Asst. Supt.*.....Atlanta, Ga.
Lamar Collier, *M. M.*.....Atlanta, Ga.
Wm. Kinron, *M. C. B.*.....Atlanta, Ga.
Wheeling, Pittsburg & Baltimore R. R. *(See B. & O.)*
Wheeling & Lake Erie R. R. 207 m. 37 lo. 1,922 c.
M. D. Woolford, *Rec. & Gen. Man.*.....Toledo, O.
O. P. Dunbar, *Gen. M. M.*.....Toledo, O.
John Hillhouse, *Div. M. M.*.....Norwalk, O.
Cleve. & Mar. Div.: P. Pease, *Rec. & Gen. Man.*
A. Galloway, *M. M.*.....Conneaut, O.
Whitby, Port Perry & Lindsay Ry. *(See Mid. of Can.)*
White Water R. R. *(See Ft. W., Cin. & Lou.)*
Whitefield & Jefferson R. R. *(See Bos., Con. & Mon.)*
Whitneyville & Machiasport R. R. 8 m. 2 lo. 48 c.
C. Sullivan, *G. M. & Pur. Agt.*.....Whitneyville, Me.
Wicomico & Pocomoke R. R. 4-8½ g. 30 m. 2 lo. 12 cars.
L. Showell, *Pres.*.....Berlin, Md.
Williamsport & North Branch R. R.
4-8½ g. 30 m. 2 lo. 4 cars.
B. G. Welch, *Man. & P. Agt.*.....Hughesville, Pa.
Williamstown & Del. River R. R.
(See Phila. & Read.)
Samuel Garwood, *Supt.*.....Williamstown, N. J
Wilmington, Columbia & Augusta R. R. *(See W. & W.)*
Wilmington & So'n R. R. 4-8½ g. 90 m. 17 lo. 153 c.
A. G. McCausland, *Supt. & P. A.*.....Florence, S. C.
George Rommel, *M. M.*.....Wilmington, Del.
Alex. Mitchell, *M. C. B.*.....Wilmington, Del.
Wilmington & Weldon; Northeastern R. R. (Central); Cheraw & Darlington; Cheraw & Salisbury; and Wilmington, Columbia & Augusta R. Rs.
4-8½ g. 682 miles 60 lo. 2,000 cars.
H. Walters, *Gen. Man.*.....Baltimore, Md.
J. F. Divine, *Gen. Supt.*.....Wilmington, N. C.
John Bissel, *Gen. Pur. Agt.*.....Wilmington, N. C.
W. H. Day, *M. C. B.*.....Florence, S. C.
J. H. Davis, *M. C. B.* (W. & W.).....Wilmington, N. C.
Winifrede R. R. 4-0 g. 5 m. 1 lo. 15 cars.
Theodore Wright, *Pres.*.....Philadelphia, Pa.
Windsor & Annapolis Ry. 4-8½ g. 130 m. 10 lo. 190 c.
P. Innis, *Pres.*.....Kentville, N. S.
Wm. Yould, *M. M.*.....Kentville, N. S.
Wm. Grierson, *M. C. B.*.....Kentville, N. S.
Wisconsin Central Ry. 4-8½ g. 480 m. 49 lo. 1,800 c.
F. N. Finney, *Gen. Man.*.....Milwaukee, Wis.
E. K. Howes, *Pur. Agt.*.....Milwaukee, Wis.
Stevens Pt. Div.:
Mis. & E'n Divs.: A. A. Allen, *S. M.*.....Milwaukee, Wis.
Mid. & Nor. Div.:
A. A. Allen, *Supt.*.....Stevens Point, Wis.
Wis. & Minn. & Chip. Falls & West.
G. T. Wiswell, *Supt.*.....Chippewa Falls, Wis.
Wisconsin, Iowa & Nebraska.
Gen. Man......Des Moines, Ia.
G. C. McMichael, *Supt.*.....Marshalltown, Ia.
Ch. C. Wheeler, *M. M.*.....Marshalltown, Ia.
Wisconsin & Michigan R. R. *(See Mil. & North'n.)*
Wisconsin & Minnesota R. R. *(See W'a Cen.)*
Woodruff Sleeping & Parlor Coach Co.
Job H. Jones, *Pres.*.....Philadelphia, Pa.
Wm. G. Johnston, *V. Pres.*.....Philadelphia, Pa.
J. C. Paul, *Gen. Man.*.....Philadelphia, Pa.
R. A. Rutherford, *Supt.*.....Philadelphia, Pa.
Wood River Branch R. R. 4-8½ g. 6 m. 1 lo. 5 cars.
L. M. Barber, *Supt.*.....Hope Valley, R. I.
Woodstock R. R. 4-8½ g. 14 m. 1 lo. 3 cars.
J. G. Porter, *Supt.*.....Woodstock, Vt.
Worcester, Nashua & Rochester R. R.
4-8½ g. 105 m. 20 lo. 523 cars.
Chas. Howard, *Gen. Man.*.....Worcester, Mass.
G. W. Hurlburt, *Supt.*.....Worcester, Mass.
A. R. Everett, *M. & C. B.*.....Worcester, Mass.
Worcester & Shrewsbury R. R. *(See N. Y., Prov. & Bos.)*
J. F. Bigelow, *Supt.*.....Worcester, Mass.
G. E. Hapgood, *Pur. Agt.*.....Worcester, Mass.
Chas. Cleveland, *M. M.*.....Worcester, Mass.
Worcester & Somerset R. R. *(See N. Y., Phil. & Nor.)*

Y

York & Peach Bottom Ry. 3 g. 40 m. 5 lo. 100 c.
S. M. Manifold, *Supt. & Pur. Agt.*.....York, P.
G. W. Hoover, *M. M.*.....York, Pa.